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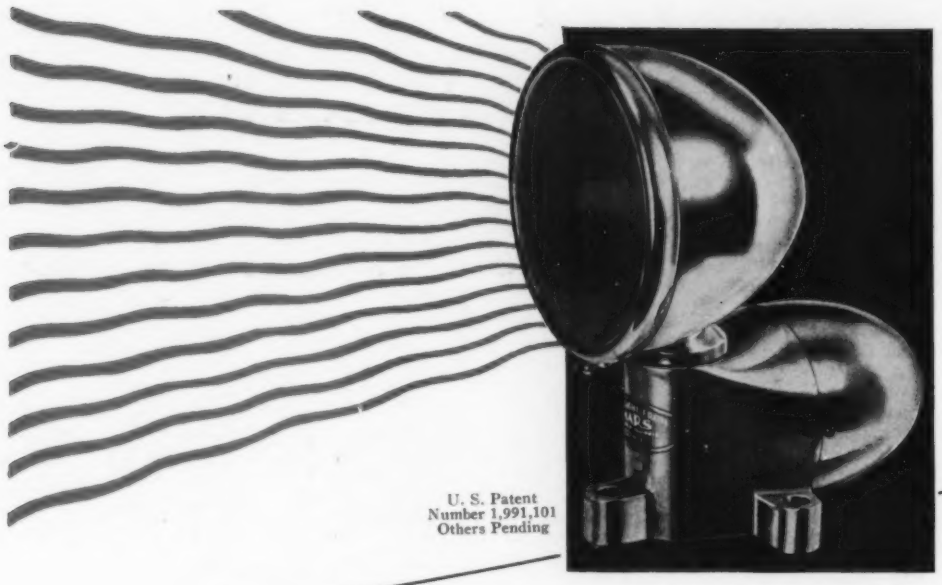
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

Vol. 89, No. 3 MARCH, 1936 Member A.B.C.—A.B.P.

Cleveland Fire Department faced a hard task in fighting a fire which involved the oil covered surface of the Cuyahoga River. The industrial area was endangered.



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There Isn't Another Light Like It!

The "LIGHT FROM MARS" *Commands Instant Attention!*

BECAUSE it operates silently. It eliminates the use of shrill, noisy signals, and nothing is more annoying than to be woke up from sound sleep by the shrill blasts of these noise making devices, which are unnecessary when you equip your apparatus with the Light From Mars.

People riding in closed sedans ofttimes do not hear these shrill signals, and the only benefit derived from them is waking people up out of sound slumber, as they do not give a motorist a proper warning. These noise making devices have become so common that drivers of cars often do not pay any attention to them until the apparatus is at a cross street, and this sometimes results in serious accidents.

The Light From Mars is not a stationary or flashing signal light, but throws a powerful figure eight steady beam of red light one mile ahead of an apparatus in the thickest of traffic and commands the instant attention of all cars on the street, as well as pedestrians, because it is the only light of its kind, and there is not another light like it. That is why the driver of a fire apparatus when it is equipped with the Light From Mars is supreme master of the highway, and commands instant attention with the rate of speed Mars, as the steady beam of red light moving at a positive and terrific rate of speed crosses street intersections fifty times a minute four blocks ahead of an apparatus.

It is this cross traffic that is most dangerous in responding to an alarm of fire. The Light From Mars also prevents two apparatus, when they are responding to an alarm of fire, from having an accident when they approach each other from opposite directions, as the driver of either apparatus may not be able to hear a warning signal, but neither could help from seeing the beam of the Light From Mars, as this figure eight beam of red light moves as high as twenty feet in the air, and therefore, the driver of another apparatus approaching a cross intersection where two apparatus meet, it would be impossible for them to have a collision if their apparatus were equipped with the Light From Mars.

It is endorsed by the leading fire apparatus manufacturers as the greatest safety signal light on the market—it being adopted and used by over 250 fire departments with the greatest success of any signal light introduced to a fire department.

Protect the lives of your men and your valuable apparatus with the Light From Mars.

Drop us a line and our representative will gladly call and demonstrate the light to you.

MARS LIGHT CO., OAK PARK, ILL.

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EVERYWHERE WITH SMITH

INDIAN FIRE PUMPS

THE WORD'S BEST FIRE FIGHTER
FOR FOREST, BRUSH, GRASS, SPOT FIRES

INDIANS are standard equipment for an increasingly large number of state forestry patrols as well as rural and city fire departments. Note INDIAN pumps in running board racks on Forestry Service trucks. Used in many parts of the country, the efficiency of these clear water extinguishers is apparent. Send for descriptive literature or see your nearest agent.

(Below) Indians on Forestry Patrol Truck of State of N. Y.

Photo Courtesy of N. Y. Conservation Dept.

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A Consolidation of FIRE AND WATER ENGINEERING *and* THE FIRE ENGINEER

FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

ROBERT H. LOCKWOOD
Associate Editor

FRED SHEPPERD
Editor

N. N. WOLPERT
Assistant Editor

ATTENTION

● This month, FIRE ENGINEERING salutes New York City.

● The New York Fire Department will complete, during this month, the first major step in its program to modernize its fire fighting facilities—a program involving an expenditure of nearly three-quarters of a million dollars.

● Three-quarters of a million dollars is, or is not, a lot of money, depending on how you look at it. Aside from the actual number of dollars involved, New York City's action is an event of the first magnitude to the fire field, because it represents a concrete example of a situation which justifies the most serious consideration.

● Careful analysis of existing data shows that 80% of all motor fire apparatus is 10 or more years old!

● In plain and simple language, this means that most of the motor fire apparatus in the country is obsolete to the point of being hazardous in present traffic conditions. It means, too, that this obsolete apparatus is imposing an unnecessary burden upon its owners in the form of high operating costs.

● Think of it! Almost all the basic improvements in motor truck design and construction have been made since this apparatus was bought! Four-wheel brakes; power brakes; low-pressure pneumatic tires; X-frames; high-compression engines; dual and down-draft carburetion; heat resisting alloys; scientific springing and weight distribution; stream-lining; safety glass, etc.—all the improvements that you know so well in your personal car.

● Modernize! It will save time and money and human life!

The Publishers

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Humorous Side of the Fire-Fighting Profession

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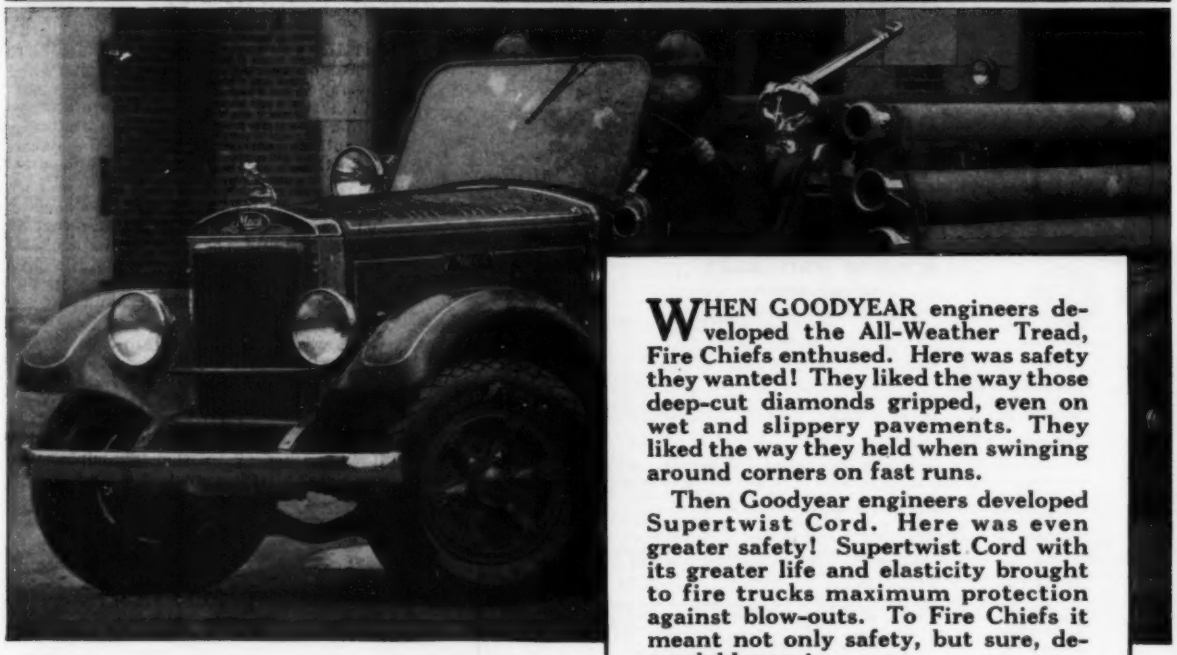
Safe—Safer—and now the SAFEST TIRE EVER BUILT for Fire Trucks



WHEN GOODYEAR engineers developed the All-Weather Tread, Fire Chiefs enthused. Here was safety they wanted! They liked the way those deep-cut diamonds gripped, even on wet and slippery pavements. They liked the way they held when swinging around corners on fast runs.

Then Goodyear engineers developed Supertwist Cord. Here was even greater safety! Supertwist Cord with its greater life and elasticity brought to fire trucks maximum protection against blow-outs. To Fire Chiefs it meant not only safety, but sure, dependable service.

Now comes the "last word" in safety for fire trucks—Goodyear LifeGuard* Tubes. With LifeGuards you avoid that instant let-down after a blow-out or puncture. You avoid those sudden swerves when a tire lets go at high speeds.

Add them up! Goodyear All-Weather Tread plus Supertwist Cord plus Goodyear LifeGuard Tube. You can't afford to overlook this SAFETY INSURANCE for your fire trucks.

THE GOODYEAR TIRE & RUBBER CO., INC., AKRON, OHIO

Look for the yellow valve stem and blue line
On this two-ply "INNER TIRE" you ride to a stop with car under control, even though casing and outer tube blew wide open
OUTER TUBE

Cross section showing position of LifeGuard Tube inside inflated tire. Note the two-ply "inner tire." It converts a blow-out into a slow leak. It brings SAFETY PLUS to your Fire Truck.

GOODYEAR LIFEGUARD* TUBE

*Registered

GOODYEAR TRUCK TIRES

DORMITORY FIRE

automatically discovered in

FAMOUS WOMEN'S COLLEGE *by* GAMEWELL SPRINKLER SUPERVISORY EQUIPMENT

Brings Fire Department to Dormitory Before Occupants Learn of Fire

TOWN OF WELLESLEY
FIRE DEPARTMENT
WELLESLEY, MASSACHUSETTS

THOMAS H. SLAMAN
Chief Engineer

The Gamewell Company
Newton Upper Falls
Massachusetts

Gentlemen:

The fire at Wellesley College on October 3rd recalls to my mind the questions that were raised in regard to the advisability of permitting this institution to be connected thru your master box to this department. While I was convinced, thru demonstrations made three years ago at the time this installation was made, that the plans to connect the sprinkler system at Wellesley College to the municipal fire alarm system by means of the Sprinklarm device and Master Fire Alarm Box was for the best interests of all concerned, I am frank to say that this practical experience has justified completely my confidence in the reliability of this device.

The experience of this department during the past three years has been entirely satisfactory, as no false alarms or other difficulties have been encountered.

The promptness of receiving the alarm on October 3rd at 5:22 P.M. which enabled my department to arrive at the college before any serious damage could materialize, either from the effect of the fire or the opening of the sprinkler system, causes me to emphasize the value of your automatic Sprinklarm device as the most direct and reliable means of summoning the aid of the fire department.

Our investigation of the fire disclosed that one of the students apparently had been smoking a cigarette and, while she claims to have extinguished it before leaving, still a waste paper basket full of papers had caught fire, spreading to a dresser and thus getting off a sprinkler head directly over the same. The occupants were not aware of any fire until the arrival of the fire department, altho they saw evidence of water leaking thru the walls. The response of the Sprinklarm was so instantaneous with the setting off of the sprinkler head that my department received the alarm thru your Master Box instantaneously, and we were on the grounds within a few minutes. While the sprinkler system had extinguished the fire, the department was able to immediately shut off the main sprinkler valve, thus bringing down the loss from the fire and the water to approximately $500.00.

I have no hesitation in recommending to my brother chiefs thruout the country the adoption of the policy of permitting Gamewell Master Boxes and Sprinklarms to be connected to their departments.

Very truly yours,

Thomas H. Slaman

Chief Engineer Fire Dept.

The effective manner in which Wellesley College officials protect the lives of their students against fire is clearly evident in Chief Thomas H. Slaman's account (above) of a fire which broke out in one of the college dormitories.

Within a few seconds after a sprinkler head operated in Cazenove Hall, Wellesley College, and deluged water upon a fire in a student's room, a *Multifold* Fire Alarm Box mounted outside the dormitory, tripped automatically and flashed its alarm directly to the Wellesley muncipal fire department.

Firemen responding, arrived at the dormitory before the occupants were aware that a fire had broken out. The Rockwood sprinkler system had effectively extinguished the fire and the fire department immediately shut off the sprinklers and prevented unnecessary water damage.

The loss was confined to within $500.00, yet the building in which the fire occurred is one of four closely grouped dormitories housing more than 500 students and having an insurable value of about $2,000,000. Thus, the value of having the automatic sprinklers in each dormitory connected to the municipal fire alarm system is clearly evident.

This simple and practical connection, often referred to as the Gamewell *Sprinkler Watchman* is an invaluable aid to every municipal fire department and a real protection to every sprinklered property.

Through the recommendations of many fire department and insurance officials, hundreds of these *Sprinkler Watchman* connections are now in service. Every fire chief and superintendent of fire alarm should encourage owners of sprinklered properties to connect their sprinkler systems with the municipal fire department in this *direct manner*. Write for a copy of our booklet FE1200 describing the *Sprinkler Watchman*.

Chief Slaman is shown (right) alongside of the Gamewell fire alarm box on Cazenove Hall, the building in which the fire occurred. This box connects the sprinkler systems in four of the college's dormitories directly with the Wellesley fire headquarters.

PROOF!

Fire Chief Thomas H. Slaman contributes here, one more practical experience to the fast growing record establishing the importance of connecting sprinkler systems with fire headquarters through Gamewell's MULTIFOLD fire alarm boxes.

THE GAMEWELL COMPANY

NEWTON, MASSACHUSETTS

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FIRE ENGINEERING

The Journal of the Fire Protection Profession

Volume 89 MARCH, 1936 No. 3

With the Editor

Responsibility Where It Belongs Last year the New York courts placed the work of the Division of Public Assembly and the Bureau of Combustibles of the New York City Fire Department under the Department of Buildings. Fire Chief and Commissioner John J. McElligott quickly sensed the disastrous results which would be brought about by this transfer of authority. He lost no time in starting legislative wheels moving toward returning the important work of these two Bureaus to control of the Fire Department.

Success was prompt. The State Legislature passed the necessary laws and the Governor promptly signed them in February.

Chief McElligott deserves commendation for his quick and effective work in maintaining his Department intact and thus keeping fire protection activities and responsibilities where they belong.

* * *

Worthless Inspections Some Fire Departments discovered, during the past severe winter, that inspections of hydrants may produce more harm than good. Unexperienced inspectors opened hydrants to find out if they were in good operating condition but failed to make sure the barrels drained properly thereafter; the result was an epidemic of frozen hydrants. The only sure way to prevent such a result is to make certain that men assigned to hydrant inspections know their hydrants—how they operate, and how they should be tested. There is no other satisfactory method!

* * *

When the Public Is the Judge "No one should be judge in his own cause." So said P. Syrus, the Roman statesman.

Columbus, Ohio, recently learned the wisdom of this statement when a vote was taken on a proposed 3 mill tax for maintenance of essential municipal services in that city. The levy was defeated. The public, serving as the judge, decided the special levy was not necessary.

Curtailment of city expenditures was thereupon necessary; twelve fire stations were closed; 168 firemen were dismissed; there will no longer be any school inspections; salvage work has been discontinued; there will be but one man in the Fire Prevention Bureau.

Here's an opportunity for insurance interests to show their sincerity in cooperating with the fire service. A good stiff increase in insurance rates would demonstrate that deficient fire protection is costly, and do it far more quickly than a heavy increase in fire loss, which must ultimately occur unless remedial measures are prompt in forthcoming.

The public proves a poor judge, particularly where the public's pocketbook is to be affected by increased tax rates, and no matter how necessary such increase may be.

Fred Sheppard

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What Price Progress in the Fire-Fighting Field?

An Analyst Gives Some Impressions as to What Could Be Accomplished Through Improvement in Apparatus

By DONALD HOLBROOK
Civilian Aide to Chief of the
Newton, Mass., Fire Department

Donald Holbrook

The Author submitted a copy of the following article to a Chief, who, in his opinion, is one of the outstanding advanced thinkers in the fire-fighting field and in a letter commenting favorably upon it, the Chief said in the final paragraph: "In conclusion, I would say that the article has only scratched the surface of a truly lethargic institution, the American Fire Department. Some few years ago one Jules Verne was considered a dreamer, and in a sense are we not dreamers, if progress is to be made. The submarine boat, radio, and airplane were considered a hopeless dream when first suggested, but time has shown the materialization of the dreams of Jules Verne. No doubt criticism will be cast on your article, but if it will produce constructive criticism I feel that something will have been accomplished."

THIS article is frankly critical of certain Fire Department practices. If it is outspoken, it is written in the friendliest spirit and for the major purpose of provoking thought and discussion. I have too high an opinion of the efficiency and splendid accomplishments of our fire-fighting forces to belittle their achievements. My interest is in progress and my hobby is research in fire-fighting and apparatus design.

It is my opinion that in most cases the design of fire apparatus is not far distant from the horse and buggy days.

The reason for these conditions is somewhat obvious.

Many apparatus manufacturers are unwilling to assume the burden of pioneering in development unless assured of a certain demand for their products. Many Fire Chiefs are unwilling to pioneer if it entails adverse criticism or a run-in with the political powers that be.

There is a surprising lethargy toward improvement and an almost fanatical desire to remain in status quo. This situation is undoubtedly aided and abetted by the fact that many apparatus manufacturers show little, if any, profit. Under these circumstances one can hardly expect them to enter an untried market.

I am fully aware that an American manufacturer has developed a three-section ladder and I highly commend his enterprise, which is certainly a step in the right direction.

First American Closed Apparatus

Well, let's skip the British if you like. The French and Belgian brigades had developed enclosed apparatus as soon, if not sooner, than the English. And speaking of closed apparatus, there is one American Chief to whom I certainly take my hat off. He had delivered last year the first enclosed pumper which has been put in service in America. I recently visited him and had the opportunity to respond to an alarm in this vehicle.

Do I hear someone say that we have no money in our city to spend for newly designed fire apparatus, or any other Fire Department use, for that matter? All they do is to cut our appropriations. That sounds familiar. We have the same trouble in my own city Fire Department, but we are overcoming it. How, you say. Well, let me digress for a minute to state that the day when the Chief of a Fire Department could limit his activities to fire operations has gone forever. In addition to his essential qualifications to be in charge of operations he must also be a supersalesman, yes, and a bit of a dreamer. He must sell his department to the public and particularly to the political powers that be. He must create a public interest in his department if he has to spend one-half of his time doing it.

That Fire Chief who has received the first enclosed pumper didn't just order it. He had to sell the idea to the city. I talked to the mayor of that city and, boy, was he sold!

The Quad Ladder Truck

Again coming back to the peculiar prejudices held by many Fire Department officials. There is the question of the quad ladder truck. If you must have a dachshund in the family, the quad is an advanced style.

I heard one chief officer make the remark, "What, make ladder men out of an engine company, or the other way around? My God, it is just a crazy idea!"

Well, I talked to the chief officer of one of our largest cities who has several quads. His statement was that the idea that engine men couldn't do a ladder-man's job was pure bunk. Ideas like that went out of style fifteen years ago with the advent of fire schools and a broader education and instruction of Fire Department members. He went on to say, however, that of course it could not take the place of a standard ladder truck in the high value districts and was

of the greatest use in outlying territory or the suburbs. The main thing, he added was to be sure to have a large enough crew to handle the increased duties. He finished by saying that a quad ladder truck could usually do the work of an engine and a city service ladder, but that the personnel of the combined companies should not be reduced by more than one-third.

Enclosed Tractor for Ladder Trucks

Speaking of ladder trucks, how about giving the men a shelter on this vehicle? No, not impossible. I have seen a sketch of an enclosed tractor for a ladder truck capable of seating six men. At least the tiller man can have a windshield. It is perfectly practical to have one secured to an arm which swings out much as some tiller wheels now do.

One last blast on apparatus. I am in favor of smaller and better fire apparatus. My "spark" friends are in favor of better and bigger fires. Well, I don't believe the two are directly related.

Now, let's look at your alarm record. See the tremendous amount of running on false alarms and for small fires. Look at those great ponderous trucks bucking the increased traffic, pounding out their heavy lives in depreciating dollars. Why has not the advance in metallurgy been applied to Fire Department vehicles? Where is our clever Yankee ingenuity which has done such wonders with restricted space on ships and private pleasure vehicles?

Value of Comparison with Other Fire Departments

The value of Fire Chiefs' conventions has been amply demonstrated, but for those fire officers who wish to keep continually abreast of the times there is a procedure which, to my mind, has even more merit. Travel about and visit Fire Departments in cities of different localities. See in actual operation the new developments as they are made.

Heavy Apparatus the Rule in America

What type of apparatus best lends itself to improvement? Let us view a first-alarm assignment making a run to a fire in, let's say a large city. What does one usually see? A great heavy pumping engine, its equipment and men unprotected from the elements and the hazards of collision. Only most recently has apparatus been delivered with even a windshield to afford meager protection to the officer and driver on the front seat.

Next will probably come that dachshund-like monstrosity, the American aerial ladder. It has always interested me to note that the larger our population grows and the worse the traffic conditions, the bigger our apparatus becomes.

After the publication of one of my articles in which I described the apparatus of the London Fire Brigade, a manufacturer wrote complaining that it was an un-American practice to publish a write-up on English apparatus which might act in disparagement of his own estimable products.

Well, my job is research, and if the British have a 100-foot or more telescopic ladder on a chassis that is shorter than that of one of our pumpers, then I am glad to tell about it. If one of our humblest volunteer Fire Departments produces something better, I shall even more gladly shout about it.

If municipalities would furnish funds for this purpose they would receive handsome dividends in Fire Department improvement. It is axiomatic in the automobile trade that no matter how carefully the manufacturer may test his product, it is the public who afford the best testing ground. The same is true of new developments in the fire game; whether it is a radically differently designed fire station, new apparatus or a new policy, six months' actual usage shows its benefits or drawbacks and the details should be available to all fire officials who may care to take advantage of them.

Always Something New in the Fire Game

Not so long ago when I was about to take a trip on which I planned to visit some Fire Departments which I had not previously covered, I asked an old Fire Chief friend who is Chief in a western city, if there were any particularly new things that he wanted me to size up for him. "No," he said. "I have seen the demonstrations of the new vapor nozzle and there is nothing else new in the fire game that I know of." It so happened that on this trip I stumbled on a new way of using the radio in broadcasting fire alarms. This system was in successful operation in a southern city and provided, among other things, an emergency alarm system to all fire stations which would be unaffected by the hazards of sleet storms or possible line trouble.

Not without an element of humor, I was able to bring back the detail of this arrangement to my friend, the Chief, who was so delighted with it that he is taking immediate steps to install a similar system.

Hazard of Consolidation of Fire Stations

One last comment on a factor which is inconsistent with good fire practice, but unfortunately has been urged on by political expediency and seems to have gained much headway. I refer to the consolidation of fire stations in large congested cities. The hazards of this practice are apparent to all Fire Chiefs. Is there not some way to stem this tide, brought into motion by the shuffle of political pressure? I know a wonderful new fire house in a large eastern city which contains five companies, two of them double engine companies. From the standpoint of perfect appointments and station efficiency, it is a model. It is a thrilling sight to see the five companies start their run at the first round of the alarm but I have also seen the entire five companies boxed outside their station for many minutes by a Saturday morning traffic jam. The possible loss of life which might take place as a result of this delay seems a high price to pay for the striking structural appearance of the "big house."

Trained Analyst Can Often Offer Suggestions

As I come to the end of this outburst, I can almost hear the fire crowd say, "Who is this guy who has never run a line of hose or commanded a company? How does he get this way, giving advice on fire-fighting practice?" Perhaps there may even be some of my friends in this group. It is a logical first reaction to the mutterings of a partial outsider.

Well, I am an economist by profession and have to be a trained analyst. I make no pretense at any ability to direct operations at a fire. Through a fifteen-year study of fire fighting, I should, however, have acquired a viewpoint on fire-fighting methods. The successful corporation calls in the trained observer, who could not possibly manage the detail of the business, to afford its executives a fresh viewpoint and a broader perspective than routine often allows them. I believe the same practice can be successfully applied to the fire game. It is surprising how isolated from each other various departments have remained. If I have stimulated discussion or even started an argument on these important matters, then this article will have served its purpose.

Another Guide for the Fire

Overcoat, umbrella and cloth were arranged on a hall rack and saturated with an inflammable fluid to trail the fire from the floor to the stairway.

The Crime of Arson

Second Article of a Series Which Will Cover the Detection of Incendiarism and the Preservation of Evidence

By GEORGE O. MANSFIELD
Chief of Fire Investigation, Massachusetts State Police

INVESTIGATION of incendiary fires, in order to be productive of results, requires great scrutiny and persistent inquiry. The success or failure of an investigation depends upon the thoroughness and attention to details given by the investigator. Consequently, members of the Fire Department who are first on the scene, are in the great majority of cases, charged with the duty of discovering evidence of incendiarism, if such may be present.

While it is true that the firemen who are first on the scene at a fire will discover evidence which probably could not be found later, it is likewise true today, with fire-prevention bureau activities being conducted by Fire Departments, that a fireman in many cases, before a fire occurs, may come into possession of information which will not only be of value in preventing incendiary fires, but may also lead to the apprehension of the perpetrator of a later fire.

For instance, the fireman may learn that a certain storekeeper or owner of property is acting in a manner which gives rise to a suspicion that he may be preparing to have a fire. The fireman may observe something in the course of inspection work, or someone who frequently visits the fire station may furnish this information. One may notice a man going into his building at night carrying a gasoline or oil can, or bundle of inflammables; or it may be noticed that goods are being removed from a building at night indicating that the stock is being secretly depleted. These instances, along with many others of a similar nature, would be cause for suspicion.

Even if there is only a slight suspicion, the Fire Department inspectors should visit the premises and inquire of the owner the amount of insurance he carries and while doing so, should make an inspection of the premises under the guise of merely checking up for fire prevention reasons. Then, if the person has been contemplating a fire, he will probably change his mind, after the visit of the fire officials. But if the information secured clearly indicates that a fire is going to be set, arrangements should be made for a watch to be placed upon the premises, so that the perpetrator of the crime may be captured in the attempt to set the fire.

Even while enroute to a fire in answer to an alarm, firemen may observe much of importance that would be of great value in the event that the fire was found to be of an incendiary origin. Take, for example, the case of an automobile seen going in the opposite direction from the fire, the registration having been noted by the officer in charge of the apparatus and later found to be upon a check-up, the car of the owner of the property involved in the fire. When questioned, this owner may claim that he was in another city miles away and knew nothing of the fire. In the case of smaller communities, where there are volunteer and call firemen, who, in answer to an alarm, converge on the location from many directions, it is most likely that a person making a get-away will be observed. This has occurred in many actual cases.

Observations from Outside the Building

Upon approaching a burning building, firemen may observe indications from the outside which may lead them

The Evidence of a Fire Being Set Through Turpentine

All walls and ceilings are covered with a heavy black soot when turpentine is used to spread fire. Firemen brushed their fingers on a wall to get an idea of its original color.

to suspect that the fire is of incendiary origin. The evidence may be heavy black smoke coming from a small dwelling or store, in which there should not be any material which would cause this type of smoke. Immediately, the fireman should be on the lookout for inflammable articles, such as in one particular case in a city that I have in mind. Here firemen, upon entering a bungalow, found that it was thoroughly soaked with fuel oil.

Again, from the outside, one may observe separate fires or they may notice that all the shades have been drawn, or that papers have been tacked up over the windows, so that the fire could gain considerable headway before being noticed from the outside. It is important to note these conditions from the outside, due to fact that the fire may destroy such evidence before entrance is gained.

Was the Building Secure?

One of the most important points in the investigation is, "Did the firemen find the building secure?" That is to say, "Were the doors locked and did the firemen have to force an entrance?" This is extremely important, inasmuch as in many cases, it is essential to show that the building was locked, that the owner or occupant had the only keys in his or her possession and therefore that he or she had the exclusive opportunity to set this fire. If the fire was set by someone else, the fire-maker must have secured the key from the owner or occupant. The officer in charge at the fire and the officer in charge of the immediate company should make a record of the fact that the doors were forced, giving the name of the fireman who forced the door and the circumstances connected therewith.

Traps, Trailers and Flash Fires

Where the fire-bug of a generation ago, resorted to kerosene, benzine, turpentine or other common materials in carrying out his designs, the modern incendiary often employs highly volatile substances of unusual composition and shows skill and knowledge in the handling of chemicals, explosives, time fuses or other devices. These means, called traps or trailers, are employed to accomplish a complete and rapid destruction of property, and, in effect, to eliminate evidence of incendiarism. They are designed to make it almost impossible to detect the presence of the agency employed.

A Novice's Experiment

This device is credited to a high school student who wanted to experiment in setting fires to see if he could set a fire without being caught. It consisted of a glass tube filled with powder, to which was attached a blasting fuse.

The Well Known Candle Method

The method of starting a fire by a burning candle is common to the incendiarist. In this case the suspect used too many candles. One was still found burning.

The use of these highly volatile materials usually produce what is called a flash fire. Upon entering a building, the firemen may be greeted by certain odors or certain types of smoke or a certain intensity of heat, which would clearly indicate that inflammable liquids or other substances had been used. In addition to detecting such odors, the firemen may observe conditions that are not found at the ordinary fire, that is to say, the intense heat; that the fire traveled with remarkable swiftness, developing great local intensity and spreading the fire over a wide area.

Know Odors

Many times, when the building has been partially ventilated by the opening of doors and windows, the fire may spread so rapidly because of the presence of inflammable liquids or chemicals, that such materials are entirely burned and there is no opportunity then to secure samples of what had been used. Thus, firemen must familiarize themselves with the various odors which come from these articles and remember what they detect, so that they may be able to testify to this later.

The presence of inflammable

A Set Up to Similate Defective Wiring Fire

A dynamite detonating cap with fuse was attached to an electrical fixture near the ceiling, in order that the fixture would be damaged and give the appearance of a fire caused by defective wiring. The fuse may be seen dangling from the fixture.

Caught With the Bag

A cellophane bag was found filled with gasoline to which a fuse was attached. The fire bug expected the evidence to be burned, but the fuse failed to function, and the trap was found intact.

liquids and chemicals may be indicated by burning on top of water, when it is stirred up by a stream which is being played on the fire, liquid running down a plaster hook handle, when the ceiling has been penetrated, would indicate liquid between the ceiling and floor above. Extreme care should be exercised when this condition is noted, because a quantity of the liquid may be released when the ceiling is pulled down and may immediately ignite and may seriously burn the firemen. Also be careful not to tip over containers, such as jugs, cans, or bottles, as they may contain highly inflammable liquids. Punch bowls, vases, bath-tubs, sinks, washing machines, hot water bottles, rubber gloves and other similar articles have been used as containers. Automobile tire inner tubes, pig's bladders, hollow rubber balls, punching bags, footballs and similar articles have been used to camouflage the presence of inflammable liquids.

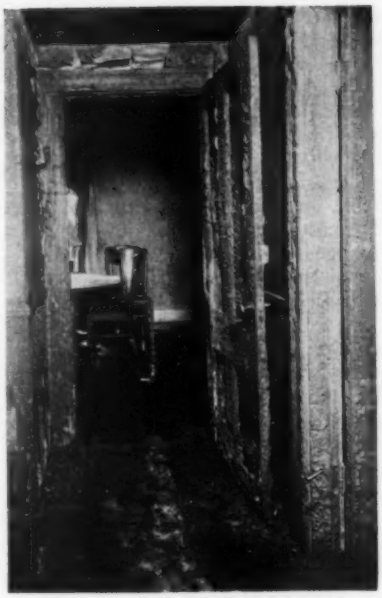
Chemicals and Other Devices

In some instances, fire-makers resort to special chemicals, but in the great majority of cases they depend upon material which can be readily secured and may include gasoline, kerosene, benzine, rubber cement, lacquer, metal polishes, acetones, stove polish, fuel oil, varnolene, paint remover, celluloid, alcohol, turpentine, benzol, naphtha, varnish, paints, amylacetate (bronzing and gilding fluid), creosote oil, cleaning fluids, linseed oil, nitro cellulose film, blasting, black, smokeless and flashlight powders, dynamite fuses, blasting caps, detonators, phosphorus and other similar articles.

Gas jets are allowed to remain open, so as to create an explosive mixture of illuminating gas; bombs are planted to cause an explosion in order to wreck a building to assure complete demolition, along with the fire; oil burner pipes are broken to allow a continuous supply of oil to feed the fire; sprinkler systems are shut off to prevent extinguishment or sounding of the automatic alarm, and in cases already on record, inflammable fluids have been injected into sprinkler systems, so that the fire is sprayed with highly inflammable liquid, when the sprinkler heads operate.

With trailers and inflammable liquids may be found the initial agency which ignited the fire, such as candles, alarm clock arranged with a battery to create a spark, lighted cigarettes placed in a box of matches, electric flatiron, electric toaster, electric soldering iron, wire short-circuited, electrical connections arranged to spark when telephone bell sounds, lighted lamps arranged to be tipped over, phosphorus which ignites when removed from water and chemicals which will ignite when placed in a position so that it will have contact with water when the sink or bath-tub overflows.

(*Continued in Next Issue*)



A Use for Cotton Batten

Trailer made of cotton batten saturated with a paint remover.

Evidence Saved by Well Trained and Careful Firemen

Glass bottles, cracked by the heat of the flames, still held gasoline when discovered by firemen who were working in the attic. They were careful not to disturb the set up, so that it could be photographed as found.

Gases, Chemicals and Hazardous Materials

Part VII

In this seventh installment is continued the discussion of chemicals and hazardous materials more commonly encountered in fire-fighting. Methods of shipping and handling and their action under exposure to fire are given for most of the materials.

Carbolic Acid (Phenol): When pure, phenol, or carbolic acid, is a white crystalline mass. It melts at 42° F. It is soluble in all proportions in alcohol, ether, chloroform, glycerine, etc. With a slight addition of water the crystals turn pink, and with 15 per cent water, the crystals liquefy, making carbolic acid of commerce. Phenol is used in the manufacture of picric acid and dyes, as an antiseptic and disinfectant in medical preparations, and is the principal constituent of synthetic resins. Mixed with other materials it is used for paint and varnish removers.

Phenol in solid state will burn only with difficulty, giving off a heavy smoke. In water solutions it involves no fire hazard. When heated it yields flammable vapors.

The material is poisonous, and should be handled with care at fires.

Celluloid: Celluloid is the commonly accepted name for all pyroxylin plastic preparations. It is the trade name of the plastic compound manufactured by one company. It ignites at low temperatures. At temperatures lower than its ignition point, it decomposes, throwing off fumes which are poisonous. Even the gaseous products of combustion are poisonous, and many deaths can be traced to this source. Hence celluloid at a fire constitutes a real life hazard, and as far as the fire hazard is concerned, it is severe. The intense heat generated by burning celluloid, together with the extreme rapidity of the travel of the fire, make a difficult task for the Fire Department to handle. Plenty of water is the best means of extinguishing fire in celluloid.

Charcoal (wood): This material, with which all firemen are familiar, is usually shipped in boxes, barrels or bags. It ignites spontaneously, when freshly calcined and exposed to air; it is hazardous when freshly ground and tightly packed. It constitutes no life hazard in itself, but where burning in quantity in the absence of sufficient supply of air, carbon monoxide is apt to be generated. It should be isolated in storage, and not permitted to be stored in large masses. Charcoal dust accumulations should be avoided.

Chlorates: The oxygen-containing metallic salts of chlorine, known as chlorates, and typified by such substances as potassium chlorate and sodium chlorate, are unstable compounds, which part readily with their oxygen and on account of this property, are not only useful in the arts, but are hazardous. They belong to that general class of substances commonly known as "oxygen carriers," which provide oxygen for combustion of other materials so freely that very high temperatures are produced. They are used as ingredients in the manufacture of matches, fireworks and explosives.

The chlorates form explosive mixtures with sugar, charcoal, shellac, sulphur, etc.; also with sulphuric acid, potassium cyanide, phosphorus or antimony sulphide. They may themselves be exploded by percussion or friction, the explosion resulting in the liberation of oxygen gas rather than in combustion. Chlorates should be carefully isolated in storage or handling from organic or other materials. Any material itself liable to spontaneous heating is especially dangerous in contact or a mixture with chlorates or other oxygen carriers. On this account and because of the danger of percussion of chlorates themselves, the spilling of such materials in warehouses or elsewhere should be carefully avoided.

While not constituting a severe life hazard in themselves, they create a severe fire hazard by their ability to furnish oxygen to the fire. Thus fires involving chlorates may burn in rooms completely sealed and devoid of oxygen from the air.

Chromic Acid: Chromic acid is usually found in somewhat crystalline form, in the shape of red, lustrous needles. It is used in medicine, electric cells, dye stuffs. It is poisonous.

It ignites organic matter and explodes when brought in contact with alcohol or acetic acid. It is a strong oxidizing agent and should be isolated in storage, for when involved in fire may cause explosion.

Chromic acid is usually shipped in iron drums and glass bottles.

Cobaltous Nitrate: This chemical is usually shipped in wooden barrels; it is an oxidizing material, and classes with sodium nitrate. It acts very similar to sodium nitrate insofar as fire hazard is concerned. It is non-poisonous.

Colophony: This chemical is shipped in barrels, is combustible, and gives off flammable vapors when heated. It is not poisonous, but the storage in which it is kept should be thoroughly ventilated. It should be placed at a point remote from fire or heat.

Copper Nitrate: This is a blue crystalline, poisonous salt, soluble in water and alcohol, and is produced by the action of nitric acid on copper or copper oxide, followed with crystallization. It is shipped in wooden barrels and kegs.

(*Continued on page* 113)

Fighting a Fierce Blaze in a Carpet Mill

A fireman and two employees were injured in this fire in a large floor covering manufactory. The eighty-five persons at work at the time of the fire had to flee for safety before the fast advancing flames.

New York Gets Big Consignment of Motor Apparatus

Delivery Made on Largest Single Order for Fire Apparatus Placed in Recent Years—20 Pumpers, 12 Aerial Trucks, 6 Hose Wagons and 8 Thawing Machines Included

Byran Thawing Machine at Work at Peru, Ind., Where It Was Called Into Emergency Service for Thawing an Outlet Sewer Catch Basin, During the Recent Cold Spell. This is the Type of Thawer Purchased by New York.

IN September of last year New York City awarded contracts for motor fire apparatus, which represented the largest single order for apparatus by the city in a decade.

It included the following:

Twenty 1,000-gallon pumpers, awarded to Mack Trucks, Inc., 25 Broadway, New York City.

Twelve 85-foot aerial ladder trucks to Four Wheel Drive Auto Company, Clintonville, Wis.

Six hose trucks to Walter Motor Truck Company, Inc., 1001 Irving Avenue, Ridgewood, Queens.

Eight thawing machines, mounted on truck chassis, to General Motors Truck Company, Pontiac, Mich.

Prior to the awarding of contracts for motor apparatus, the city had purchased 173,000 feet of 2½-inch hose, 12,500 feet of 1½-inch hose and 20,000 feet of 3-inch. The purchase price for motor apparatus and hose totaled $643,225. Delivery has just been made of the motor apparatus.

Of particular interest are the specifications for the pumpers, which are of the centrifugal type.

To quote the specifications:

"It (each pump) shall be especially designed for the purpose intended, i.e.: for use in connection with fire apparatus, having in mind the wide variation in capacity and head required in meeting the specified tests. The arrangement of suction and discharge piping, valves, etc., required to accomplish the parallel and series operation shall be, so far as possible, integral with and form with the pump casing a harmonious and well designed assembly.

"The pump shall be of the multi-stage centrifugal type, having not less than four stages and not more than eight stages, the stages to be counted when operating in series. The pump shall be equipped with a positive and quick-acting vacuum pump of ample capacity, with control located near the driver's seat, for use in exhausting the air from the pump and connected suction hose when drawing water from a level below the pump. The rotating parts of the main pump and vacuum pump shall be statically and dynamically balanced. All parts in contact with water shall, as far as practicable, be machined or finished smooth, so as to reduce the friction loss in the pump, piping, valves and passages to a minimum. Means shall be provided for taking up any unbalanced end thrust on the pump shaft.

"There shall be connected directly from the pump to turret pipe, a flexible Spencer connection and control valve, with a full 3-inch waterway; valve to have a long spindle, with a six-inch operating wheel to be on operating side of apparatus in line with body, spindle to be supported in guide sleeves and securely fastened.

"The motor shall be a straight six cylinder, four cycle, heavy duty, of ample size to meet the road tests and pumping tests set forth.

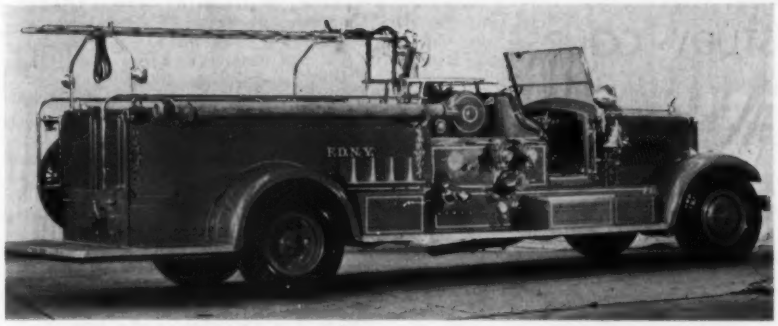
"The contractor shall furnish a certified test diagram for the motor in each apparatus, showing the torque, horsepower, r.p.m., fuel consumption, mechanical efficiency, etc., outlet temperature of circulating water not to exceed 180° under any condition; and a test diagram for pumps showing r.p.m., efficiency and head throughout operating range, capacity and head.

"Oil and gas consumption tests: Immediately after the brake horsepower tests, the engine shall be run for eight hours, developing continuously not less than 85 per cent of its maximum horsepower, as developed in the b.h.p. test. During this test, the consumption of gasoline and oil shall not exceed the following proportions:

"Gasoline—13.5 gallons per hour at 120 b.h.p.

"Oil—1.00 pint per hour at 120 b.h.p.

Side View of One of Mack 1,000-Gal. Pumpers for New York Fire Department.



Rear View of One of the Mack 1,000-Gal. Pumpers for the New York Fire Department

"Pumping tests: All tests will be made while taking suction from the East or North Rivers with a maximum lift of 14 feet. The engine must not, in any case, when delivering rated capacity, operate at a speed greater than 1,600 r.p.m., or a piston speed greater than 1,800 feet per minute. The apparatus will be required to comply with the following tests. Volume and pressure shall be from any outlet or outlets.

"It shall deliver not less than 1,000 gallons of water per minute against a gauge discharge pressure of 160 lbs. per square inch at the pump and shall maintain this discharge for four hours continuously without showing evidence of overheating or other defects.

"It shall deliver not less than 500 gallons of water per minute against a gauge discharge pressure of 320 lbs. per square inch at the pump and shall maintain this discharge for four hours continuously without showing evidence of overheating or other defects.

"It shall deliver not less than 400 gallons of water per minute against a gauge discharge pressure of 400 pounds per square inch at the pump, and shall maintain this discharge continuously for three hours without showing evidence of overheating or other defects.

"It shall deliver not less than 250 gallons of water per minute against a gauge discharge pressure of 600 pounds per square inch at the pump and shall maintain this discharge for thirty minutes continuously without showing evidence of overheating or other defects."

Aerial Ladders Specifications

The aerial ladders purchased are of 85-foot extension and consist of a tractor and semi-trailer carrying the ladders and other equipment. The tractor is of the four wheel drive type, with semi-trailer attached to the tractor by a fifth wheel. The apparatus is similar in general arrangement and construction to the aerial hook and ladder trucks last purchased by the New York Fire Department.

The thawing machines, three of which type were placed in service a year ago in New York, consist of Byran Steam Corporation units, mounted on General Motors Trucks chassis. These units generate superheated steam at a temperature of approximately 750 degrees F., and the steam is delivered through metal hose to the point at which thawing operation is required. Oil is used as the fuel in the steam generator.

Burke Heads N. Y. Marine Division

Harold J. Burke, Battalion Chief of the New York Fire Department, has been appointed by Commissioner McElligott to head the Marine Division, and advanced to the rank of Acting Deputy Chief. Chief Burke fills the vacancy caused by the death of Charles W. Rankin, Acting Deputy Chief.

Chief Burke is thirty-eight years old and has been a fireman since Marrch 1, 1920. He has been in charge of the Twelfth Battalion in the Harlem area since 1934. On April 22, 1928, he won the Department Medal and the Crimmins Medal for heroism in rescuing a Negro woman from the top floor of a rooming house.

Columbus Closes 12 Houses—Fires 168 Men

Twelve fire engine houses in Columbus, Ohio, have been closed and 168 firemen have been dismissed as an economy move, in line with cuts in other departments, to cut down the cost of local government.

Four truck companies and eight engine companies will be in service, but there will no longer be any school inspections. Neither will there be salvage and rescue units. The Fire Prevention Bureau, which is always an important part of a department, will have only one man. Two district Chiefs were made Lieutenants.

The need for cutting expenses is so great that ninety-five men of the Division of Street Cleaning were also dismissed, and the head of that division painted a rather sad picture regarding the cleaning of streets and collection of rubbish. The Police Department lost 150 men.

The real cause for these sharp measures is that at the last election the voters rejected a three-mill levy and decided to operate the city on its present income.

Those at Fire Headquarters rearranged the running card and redistributed the men so that some semblance of order may be obtained, even with the limited force.

Chief Edward P. Welch hopes to bring the situation before the public at the May election and secure additional funds for the proper maintenance of his department.

LARRY DONOVAN.

Smoke and Gases Explained

L. S. Johnson, of the Davis Emergency Equipment Company, of New York, was the principal speaker at the meeting of the New Hampshire Fire Chiefs' Club held in the Eagle Hotel, Concord, on February 12. He spoke on Smoke and Gases that are thrown off from burning materials and the necessary precautions that must be taken to avoid them. Various types of gas masks were shown, and their uses and limitations explained. Chief John B. Riley, Keene, presided, assisted by the Secretary, Chief Albert C. Melendy, Nashua. The meeting was preceded by a luncheon.

HARRY BELKNAP.

Utica Fights Underground Gas Fire

Fifteen gas blasts caused by burning gas in underground gas mains in the business section of Utica, N. Y., tied up telephone and transportation service, and caused the city an anxious period before the fire was under control.

It is believed that a workman, in trying to repair a frozen main, struck his pick on an object, which started a spark, and this spark set fire to gas which had flowed into cable tunnels and sewers.

The explosions and fire continued all of February 18, and tied-up a six-block area in the down town district. Plate glass windows were shattered and a policeman was seriously injured by a falling manhole cover.

The flow of gas into the affected area was abated by the use of rubber sacks which resembled large basketball bladders. These rubber bags were inserted into several of the gas mains, and the bags inflated to form gas-tight obstructions in the mains. These rubber bags are commonly used in Sewer Department work, as well as by gas utilities.

Fifty National Guardsmen assisted the local police in keeping the public out of the dangerous area.

Wants Used Pumper

A Fire Department, with limited funds, would like to purchase a small second hand pump, or a truck with a small pump attached, in good condition. Those interested should write to Lester Pape, 267 E. Main Street, Patchogue, N. Y.

PROMOTIONAL STUDY COURSE

Herein is presented a series of definitions, questions and answers, designed to aid fire department officers in preparing themselves for promotional examinations. In this department, which appears monthly, will be included questions typical of examinations held throughout the country.

Definitions

Approved: The term "approved" usually refers to a device, material, or construction which has been approved by the Underwriters Laboratories.

Area of Building: The area of the horizontal cross-section at the ground level measured to the center of party walls or fire walls, and to the outside of other walls.

Bearing Wall: A wall which supports any load other than its own weight.

Dead Load: The weight of the walls, framing, floors, roofs, tanks with their contents, and all permanent construction.

Division Wall: Any interior wall in a building.

Questions

(To be answered in next installment)

1. If on your way to a fire you discover a second fire, what would you do?
2. As officer in charge of your company, you are returning from a fire with your company and discover another fire which has just broken out. What would you do?
3. State in detail how you would remove live trolley wire obstructing work at a building on fire.
4. If a line of hose were to break between third and fourth floors of a building, how should it be replaced?
5. Give the procedure for connecting and operating a gear-type motor pump at a hydrant.

False and True Questions

(Is each statement false or true? Answers in next installment.)

6. T F—Proper ventilation may reduce the amount of water required for extinguishing operations.
7. T F—In many cases the deluge set is better adapted for specific applications than are the turret nozzles which are attached to apparatus.
8. T F—A one-inch stream, even at excellent pressure, will do less good than will a one and one-quarter-inch stream at poor pressure.
9. T F—All distributors are so designed as to revolve automatically and spread the water in all directions.
10. T F—The advantages of 1½-inch lines at some fires are such as to permit of extinguishing these fires with less water damage than if the larger streams available were used.
11. T F—An electric lamp with the bulb destroyed may become a hazard to men operating at a fire.
12. T F—A pyromaniac is a person who sets fire to a building as the result of an impulse or desire for excitement.
13. T F—The wide use of electricity is primarily the cause of the large number of fires caused by electricity.
14. T F—If a fire appears of suspicious origin it is the duty of the officer first on hand to report same to his superior.
15. T F—The chilling effect of the discharge from carbon dioxide extinguisher aids greatly in putting out fires.
16. T F—Foam as ejected from foam extinguishers is 80 per cent moisture.
17. T F—Carbon tetrachloride vapors are heavier than air and smother fire.
18. T F—Properly charged pump tank extinguishers are suitable for use in cold storage plants.
19. T F—Inflammables piled against the outside of a building occasionally indicate arson.
20. T F—Fuses and circuit breakers are of minor importance in an electrical wiring system, insofar as fire safety is concerned.
21. T F—Fire walls carried well above the roof lessen the exterior exposure hazard.

Completion Statement

22. There is a dust explosion hazard in a polishing factory due to.....
23. The.....nozzle should be used on inside fires which have not attained large proportions.
24. Carbon monoxide gas results from .....
25. Wire glass should not be used for skylights over stair wells because .....
26. Water should not be used in extinguishing small fires in calcium carbide because.....

Answers to Questions in Previous Installment

1. (a) 10 feet.

(b) The distance the butt of the ladder should be placed from the base of a building, in the case of trussed ladders, is found by dividing the length of the ladder by five and adding two to the quotient.

In the case of beam ladders, the distance the base should be placed from a building is found by dividing the length of the ladder by eight, the quotient being the distance the base should be placed away from the building.

2. Plain glass, cracked by heat, may fall out of window frame. Wired glass remains in position even if cracked, due to the reinforcement of the wires.

3. Sand.

4. Approximately 14.7 pounds per square inch. Yes, the greater the atmospheric pressure, the greater the height to which water can be lifted by "suction."

5. False; 6. True; 7. True; 8. True; 9. True; 10. True; 11. True; 12. False; 13. False; 14. True; 15. False; 16. True; 17. True.

18. . . . near. . . .
19. . . . opposite. . . .
20. . . . third. . . .
21. . . . Babcock. . . .

Questions with Answers

Question: Assume a fire in a five story building 50 by 100 feet, located in the center of a block of 4-story buildings, all of which are of open joisted, second class construction. The building fronts on a 50 ft. street and extends through to a 20-ft. passageway in the rear. There is a stairway in the front and a stairway and a freight elevator in the rear, the rear stairway ascending from the basement to the roof. The windows in the rear, and the side windows on the top story, are equipped with standard fire shutters. The building is occupied as a furniture factory, the furniture being manufactured to a finished state. With the exception of fire extinguishers (carbonic acid gas type) and fire pails, the building is without fire extinguishing appliances.

You are the first officer to arrive in response to a bell alarm, and find the fire has gained considerable headway in the two upper stories of the building. The fire occurs at night; there is no life hazard to be considered.

Explain in detail how you would handle the situation if you were in charge of the fire for 15 minutes.

Answer: The greatest immediate danger in this fire is the possibility of fire extending to the building across the 20 ft. passageway at the rear. A "woodworker" fire spreads with extreme rapidity, and with the generation of intense heat. In old type buildings of this kind, there is always danger of fire getting through the walls due to lapping beams or unprotected openings leading to adjacent structures. These points must be considered in handling the fire. The highly hazardous occupancy of the building and the progress of the fire upon arrival of the department warrant immediate transmittal of third alarm. I would, therefore, upon my arrival, after noting the condition of the fire, order a third alarm transmitted at once.

In operating at this fire, as at practically all fires, the first consideration is to prevent the fire from extending. To accomplish this I would have the first engine company stretch in two lines through the front of the building, on the ground floor, one going to the rear elevator and stair shaft and the other going up the front stairs, after first making sure that no fire has dropped below. In other words, these lines should not proceed upward until it is absolutely certain that there is no danger of their being cut off. The function of these lines, once they are stretched up the stairways, would be to prevent fire from backing down on the third floor. Second company would be placed on the street to the rear, and single line stretched with 1¼-inch nozzle to the roof of the 4 story building immediately to the rear of the fire building. Third engine company would also be placed on the street with the second company, and a line stretched with 1¼-inch nozzle to the third floor of the building, to operate into the fourth floor of the fire building. These two lines operat-

ing at the rear would prevent extension of the fire across the 20 ft. passageway until additional help had arrived. I would send engine company No. 4 up ladder at front of building to fourth floor to work from the window sill and drive the fire back. From the statement in the question it is assumed that the fire has not completely involved the fourth floor.

In making the above and following assignments it is assumed that the response to alarms is as follows:

First alarm, four engine companies and two ladder trucks; second alarm, four engine companies, two ladder trucks; third alarm, three engine companies and one ladder truck; fifth alarm three engine companies and one ladder truck. It is also assumed that a water tower responds with the second alarm assignment and a second and third water tower can be "special called" if needed.

Immediately upon the arrival of the water tower with second alarm assignment, it would be placed on the street in front of the fire building and tower stream gotten into operation at once on the fifth floor. If subsequent heavy stream is needed the deck pipe would also be put into play to operate in on the fourth floor, although this stream would not operate with full effectiveness due to the height of the floor. Fifth engine company would supply tower with water. I would place the sixth engine company at a convenient hydrant on the street near the fire building and stretch single line to roof of adjoining building on left. Seventh engine company would be placed at convenient hydrant and a line sent to the roof of the adjacent building at the right. Eighth engine company would be ordered to stretch two lines to the roof of the building across the passageway at the rear of the fire, siamesing into a deluge set or a single section of hose equipped with 1½-inch nozzle and pipe holder. The stream would be used to drive the fire back in on the fifth floor and also operate on the fourth floor if needed. Ninth engine company would be placed at the street to the rear of the fire building, and a single line stretched to the third floor of the building across the passageway from the fire building. This line to operate in on the fire on the fourth floor. Tenth engine company would be sent to the roof of the adjoining building to the right of the fire building, with single line and the eleventh engine company to the roof of the adjoining building on the left, with a single line.

By this arrangement we would have the rear of the building covered, both sides of the building properly protected, and effective work being done from the front as well. Lines operating from the roof of adjoining buildings should be able to handle the fire there effectively on the top floor, while lines from below and from the building in the rear, as well as from the street in front, should be able to hold the fire on the fourth floor and bring it under control.

The truck companies would be employed as follows:

First truck company to open up for engine companies and to ventilate as soon as lines are ready to follow up the fire. Second truck company would be sent to the roof of adjoining buildings to close shutters on windows and also to close shutters at rear of fire building, where they are not being employed for fire-fighting operations. These, and subsequent ladder companies, would place ladders in front and rear as needed, and survey adjoining buildings to make sure that fire has not passed through from the fire building.

These truck companies would also assist in subsequent ventilation work, going to the roof of the fire building by way of adjoining buildings. In the event that condition of fire subsequently showed that additional help would be required, no time would be lost in the transmission of fourth and even fifth alarms if such were warranted.

New York Department Wins Inspection Rights

With the signing of two bills by Gov. Lehman, the New York Fire Department regained its authority for inspection of buildings, and to pass on cases involving combustibles, inflammables, chemicals, gasoline, etc. For a while, the department had no right to do more than inspect fire hydrants and fire alarm boxes.

John J. McElligott, Fire Chief and Commissioner, was aided in his persistent fight for inspection rights, by the recent fire in a Chinese-American restaurant, where nine lives were lost, and which he claims could have been averted if firemen had inspected the place for fire violations. That fire was spread by inflammable drapes that were festooned from the ceiling.

An order was immediately issued after the bills were signed, establishing the Bureau of Combustibles, and the Division of Places of Public Assembly as bureaus of the Fire Department. The inspection powers, when they were taken from the department, were transferred to the Building Department on the grounds that such a move eliminated duplicate inspection work.

Westchester Chiefs Consider Sizing Up of Fires

The subject of "The Sizing Up of Fires" was dealt with in an address by retired Captain Deasy, of the New York Fire Department, at the regular meeting of the Fire Chiefs' Emergency Plan, which took place on the evening of Wednesday, February 19, at the Riverview Manor Hose Company's House, Hastings-on-Hudson, N. Y.

President Krows presided and also welcomed the members as Fire Commissioner of Hastings.

Chief Chambers, Yonkers, reported that Governor Lehman had vetoed the bill allowing the transportation of dynamite through the streets.

Chief Woolley referred to the splendid cooperation received by the Plan from Chief McElligott, of the New York Fire Department.

A rising vote of thanks was given to Captain Deasy for his address. On invitation of Chief LeVino, of the Weaver Street Fire Department, it was decided to meet at Mamaroneck on the evening of Wednesday, March 18.

Cincinnati, Ohio, has placed an order for three Mack pumpers and a Mack aerial ladder.

The Department is so Efficient—Even the Mayor Praises the Men

San Bernardino, Cal., was visited by a midnight fire which caused $125,000 damage to the Hotel Stewart. All of the occupants reached safety. In many cases the firemen shouted to guests not to jump as they would take them down. Following the fire, the Mayor published in a local paper, "Pathetically undermanned and with equipment of an ancient vintage, the Fire Department, without any casualties, added another laurel to their record in the Hotel Stewart fire. Handicapped as they were, every man in the department responded to the alarm, whether on duty or off. We cannot give too much credit to men of this type who, for a salary that is less than that paid to the average clerk in a store, will risk their lives to protect the lives and property of the people in this city." He went on to explain that the city pumpers dated back to 1910 and that the city had one-third the number of firemen that it should have.

Directors and Committeemen of the I.A.F.C. in Session at the Hotel Roosevelt, New York City, February 10 to 14

L. to R.: Chief James T. O'Donnell, Salvage Corps, St. Louis, Mo., Director; Chief Thomas F. Burns, Bridgeport, Conn., Committeeman; Fred Shepperd, Headquarters Manager, I.A.F.C., N. Y. City; Chief Peter Steinkellner, Milwaukee, Wis., Director; Chief Robert Bogan, Baton Rouge, La., First Vice-President; Chief Charles J. Brennan, San Francisco, Cal., President; Chief Daniel B. Tierney, Arlington, Mass., Second Vice-President; Ex-Chief James J. Mulcahey, Yonkers, N. Y., Secretary-Treasurer; Chief W. W. Stephen, Anniston, Ala., Director; Chief Louis P. Kerner, Jr., Rio Vista, Cal., Director, and Ex-Chief Jay W. Stevens, San Francisco, Cal., Executive Secretary.

I. A. F. C. DIRECTORS MEET TO ARRANGE DETAILS OF THE TORONTO CONVENTION

Registration by Districts, Fire Protection in Hotels, Progress Made in Civil Service Law and Other Subjects Discussed

THE annual meeting of the Board of Directors of the International Association of Fire Chiefs was held at the Hotel Roosevelt, New York City, on February 10 to 14. The principal business taken up was the setting of the date for the annual Convention to be held in Toronto, Ontario, and also laying plans for the program of that meeting. Details were also set forth on a drive for membership and for convention attendance. Many other topics were discussed, including the proposed civil service law, cooperation with the National Board of Fire Underwriters, and better protection for hotels.

The date selected for the annual convention at Toronto are July 21 to 24 inclusive. Headquarters will be at the Royal York Hotel and room rates announced by a representative of the Toronto Committee are $4 per room single, and $7 double.

Registration by Districts

In order to simplify registration, and enable the Registration Committee to make sure that all registering are in good standing, a plan, similar to that followed at the Portland Convention in 1927, was outlined. Each district organization will be required to have a representative at the registration desk to check the status of each member applying for registration. Before membership badge is issued, member will have to bring his dues payment up to date.

Drive for Membership and Convention Attendance

President Brennan prior to the Directors' meeting appointed Chief John J. McElligott, of New York Fire Department, as Chairman of the Committee on Registration and Convention Attendance. At the Directors' meeting, the Chairman, with the aid of the representatives of the various districts, appointed state committeemen to aid Chief McElligott.

Cooperation with National Board of Fire Underwriters

All of Tuesday, February 11, was devoted to the discussion of the subject of cooperation with the National Board of Fire Underwriters. Upon invitation of the National Board of Fire Underwriters, the delegates proceeded to the office of the National Board, 85 John Street, New York City, where the two organizations went into joint conference.

Those from the National Board sitting in on the conference included W. E. Mallalieu, Manager; George W. Booth, Chief Engineer; T. Alfred Fleming, Chief of Conservation; Mr. Balaski, Chief of Arson Investigation, and A. C. Hutson, Assistant Chief Engineer.

The subjects discussed were advantages of civil service in Fire Departments and penalties incorporated in the Standard Schedule for Rating Cities and Towns for fire defenses, where members of the Fire Department are not protected by civil service; desirability of cities and towns spending money for Fire Department improvements where they are already enjoying a position in the middle of a classification and where a moderate expenditure for improvements would not raise the classification, and per capita fire losses.

Progress on Civil Service Law

One entire day was spent in discussing the features of the proposed Civil Service bill, to be sponsored by the International Association of Fire Chiefs for general adoption throughout the country.

After discussion of the subject, the original suggested skeleton of the civil service law outlining 21 essential points was selected as the most practical and quickest way of securing action. Upon motion by Chief Steinkellner, and unanimous vote of the Board of Directors, the skeleton outline of 21 essential points was adopted by the Executive Committee.

At the suggestion of Chief Steinkellner, a resolution was adopted to the effect that the Executive Committee recommends to the Resolution Committee that the latter draft a civil service law envolving the 21 points.

Friday Session

The first action of the Executive Committee on Friday morning was to draft a resolution on fire protection in hotels.

The Executive Committee recommended that copies of the resolution be presented to every Governor, to various commercial clubs, such as Kiwanis, Lions and Rotary, U. S. Chamber of Commerce, to the American Hotels Association and to others who are in a position to be influential in securing necessary legislation, or who are interested in the subject of reducing the life hazard in hotels.

Further Conference With National Board

At the Friday session, George W. Booth, Chief Engineer of the National Board of Fire Underwriters, and A. C. Hutson, Assistant Chief Engineer, were invited to sit in on the discussion. The question of overinsurance of properties was presented by Chief Steinkellner. There was considerable discussion on this subject.

Mr. Hutson called attention to the advent of all-metal ladders, and suggested that a committee be appointed by the Board of Directors to sit in with the National Board of Fire Underwriters, and manufacturers, to discuss metal aerial ladders. Chief Daniel B. Tierney was appointed by President Brennan to serve as Chairman of the Committee along with Chief Thomas Burns, of Bridgeport.

George Morley Honored

A motion was made by Chief James J. O'Donnell that Honorary Life Mem-

bership be conferred on George E. Morley, to carry with it all the privileges of the active membership and that his election be recommended at the annual convention in Toronto. This was carried unanimously.

Inspections by Other Than Fire Departments

A resolution in the form of a letter to Chief McElligott, of the New York Fire Department, was presented by Chief Brennan and unanimously carried. It called attention to the local conditions of law delegating powers to authorities other than the Fire Department which can only be properly exercised by that department. Reference was made to the fire in the Chinese-American Restaurant, with loss of life, resulting from just such a case of divided authority. The letter was despatched to Chief McElligott, following the adjournment of the meeting.

A letter of commendation to Chief Ray Tiller, of Waterloo, Ia., for the commendable work he has performed in the Missouri Valley Association was also ordered sent.

In closing the meeting, it was recommended that all district officers be contacted prior to the annual convention, in order to have the district officers make suggestions for improved service which the International might be able to render to its members, such suggestions to be presented at the annual meeting of the Board of Directors at Toronto, just prior to the Convention in that city in July.

Those present at the meeting of the Board of Directors were as follows:

Charles J. Brennan, Chief, San Francisco, Cal., President.
Robert A. Bogan, Chief, Baton Rouge, La., First Vice-President.
Daniel B. Tierney, Chief, Arlington, Mass., Second Vice-President.
Jay W. Stevens, State Fire Marshall, of California, San Francisco, Executive Secretary.
James J. Mulcahey, Ex-Chief, Yonkers, N. Y., Recording Secretary-Treasurer.
Fred Shepperd, New York Headquarters, Manager.
I. H. Case, New York, Publicity Manager.

DIRECTORS

Peter Steinkellner, Chief, Milwaukee, Wis., Great Lakes Division.
L. P. Kerner, Jr., Chief, Rio Vista, Cal., Pacific Coast Division.
Jas. T. O'Donnell, Chief of Salvage, St. Louis, Mo., Missouri Valley Division.
Ross B. Davis, Chief, Philadelphia, Pa., Eastern Division.
W. W. Stephen, Chief, Swann Chemical Company, Anniston, Ala., Southeastern Division.

VISITORS

Jas. N. Sullivan, Chief, Utica, N. Y.
Thos. F. Burns, Chief, Bridgeport, Conn.
C. M. Johnson and wife, Chief, Knoxville, Tenn.
Chief Sinclair, Toronto, Can.

OTHERS ATTENDING

Geo. Thomas, American-La-France Company, Toronto, Can.
Joe Green, Eureka Fire Hose Division of U. S. Rubber Company.
H. J. Ringers, Fabric Fire Hose Company.
G. E. Morley, Gamewell Company.

Warning to Advertisers

Chief John W. O'Hearn, of Watertown, Mass., Secretary, New England Association of Fire Chiefs, has sent out a postal card bearing the following message:

"Warning to Advertisers: Smash the racket of illegal solicitation of funds and advertising. Well meaning persons are being victimized every day. No one is exempt. All kinds of schemes are being promoted. The name of the New England Association of Fire Chiefs, or similar sounding names, is being used. No one is authorized to use the name of the association for the solicitation of funds or advertising."

HARRY BELKNAP.

International Officers Visit Boston

Chief Charles J. Brennan, San Francisco, Cal., President of the International Association of Fire Chiefs; Chief Robert Bogan, Baton Rouge, La., First Vice-President; Jay W. Stevens, Executive Secretary, and State Fire Marshal of California; and Chief Peter Steinkellner, Milwaukee, Wis., visited Boston, Mass., after attending the meeting of the Board of Directors of the International Association in New York City.

Chief Daniel B. Tierney, of Arlington, Mass., Second Vice-President, who extended the invitation to Boston, and George E. Morley, of the Gamewell Company, accompanied the party from New York.

During their Boston visit the Chiefs were shown points of historic interest, including the State House, the old North Church, Bunker Hill Monument, the route of Paul Revere, and the Massachusetts Institute of Technology.

A tour of inspection was made to Boston Fire Alarm Headquarters in The Fenway, from where the Chiefs were taken to Brookline and shown two fire stations by Chief Selden R. Allen, Past President of the International Association. The lighting truck, service truck, emergency boat, and other special items of equipment in the Brookline Fire Department were viewed with much interest by the Chiefs.

The trip continued to Arlington, where Chief Tierney showed his guests the apparatus and quarters in the Central and Highland Stations.

Chief Brennan visited St. Stephen's Church in Boston, where his mother and father were married and also the house in which his parents lived in Boston many years ago, before they moved to the Pacific coast.

George Morley, of the Gamewell Company, played host to the Chiefs at a luncheon in the Parker House in Boston on Saturday, February 15, and in the evening of the same day the officers of the New England Association of Fire Chiefs tendered a banquet at the same hotel in honor of the International officers. Valentine place cards and decorations adorned the table.

Those present at the luncheon were:

Chief Charles J. Brennan, San Francisco, President of the International Association of Fire Chiefs; Jay W. Stevens, State Fire Marshal of California and Executive Secretary of the I.A.F.C.; Chief Daniel B. Tierney, Arlington, Mass., Second Vice-President; Chief Robert Bogan, Baton Rouge, La., First Vice-President Chief Peter Steinkellner, Milwaukee, Wis.; Chief Selden R. Allen, Brookline, Mass., Past President, I.A.F.C.; George O. Mansfield, Chief Fire Inspector, of the Fire Marshal's Division, Massachusetts Department of Public Safety; William J. McAuliffe, Special Agent, National Board of Fire Underwriters; Charles Madden, aide to Chief Allen; George E. Morley and John J. Ryan, of the Gamewell Company; George F. Cobb, State Commissioner of Firemen's Relief in Massachusetts; and Harry Belknap, Press Representative, New England Association of Fire Chiefs.

There were no speeches at the luncheon, but at the banquet in the evening many stories and reminiscences were related. Chief David H. DeCourcy, of Winchester, Mass., President of the New England Association, acted as toastmaster. Thirty-six persons attended the dinner.

HARRY BELKNAP.

I. A. F. C. Officers Visit Boston

L. to R., Seated—Chief Charles J. Brennan, San Francisco, President, International Association of Fire Chiefs, and Chief David H. DeCourcy, Winchester, Mass., President, New England Association of Fire Chiefs. Standing—Chief Daniel B. Tierney, Arlington, Mass., Second Vice-President I. A. F. C.; Jay W. Stevens, State Fire Marshal of California, and Executive Secretary, I. A. F. C.; Chief Peter Steinkellner, Milwaukee, Wis., Director, Great Lakes Division, I. A. F. C., and Chief Robert Bogan, Baton Rouge, La., Second Vice-President, I. A. F. C.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

SUPERVISION OVER AUTOMATIC SPRINKLERS

PROPERTY protected by automatic sprinklers has been of material assistance to Fire Departments in reducing the possible damage by fire, and in protecting adjoining buildings.

In order to make sure that these systems are capable of functioning at all times, certain measures or regulations are necessary for their installation, and for their supervision.

In the box on this page is the question that is discussed in this issue. Due to the many replies that have been received, the discussion has been divided into two parts and will be concluded in the next issue.

Discussion of the Question

Richard Lee Smith, Chief, Pittsburgh, Pa.: Supervision is maintained by regular inspections made by our men over automatic sprinkler systems in our city. Such installations and inspections are considered of major importance in our efforts here to control fire losses, and we look upon such installations as being, next to the Fire Department itself, the most necessary and most efficient agency in the control of fires and fire losses. Our building code ordinances here covering installations of sprinkling systems are fairly good, but I very often wish such ordinances were retrocative, in that we could compel owners or occupants to install sprinkler systems in certain risks, if only, or rather particularly, in basements and first floors of buildings in high value districts that at present are exempt. Many a big fire, with its large exhorbitant loss, would have been held in check, if the building had been equipped with sprinklers.

We test the systems where we think it is necessary or upon request. Our office has contact with the Underwriters' office here in checking up on these installations, where changes or repairs are being made or where fires have occurred. In addition, twice a year, one of which is in the Fall, we make a special inspection of all outside connections both of standpipe and sprinkler systems to check on them as to being in fit condition for use.

Company officers are required to know the locations of all outside connections, control valves, pumps, etc., of all installations in their districts and whether they are supervised by an electric system or not.

Where sprinkler systems are installed and are not electrically supervised, the price of success in their operation, when most needed, is only paid by strict inspection and supervision, not alone on the part of the Fire Department, but mostly on the careful attention given them by the owner or occupant. This should take into consideration the need for sprinkler heads to be in fit condition, not allowing paint, white-wash or rust to collect, and that control valves, pumps, etc., always be fit for immediate service. Care should be taken that stock, material or shelving, etc., be placed in such manner as not to interfere with the efficient operation of the heads when opened. Practically all sprinkler system failures recorded have been due to carelessness in some or all of the points noted above.

S. D. O'Conor, Chief, Beaumont, Tex.: Regular inspections are made of sprinkler installations to see that they are in good working order. They are tested if a request is made.

All men in the district in which are located sprinklered risks, are acquainted with location of all outside valves, control valves, section valves, tank cut-offs and location of spare heads, so that they may be able to insert without waiting for a watchman or owner to appear.

John H. Espey, Chief, Elmira, N. Y.: We do not supervise automatic sprinkler installations in Elmira. There is a local maintenance man in the employ of sprinkler companies who cooperates with us.

Our inspections include a check of sprinkler connections, valves, etc., when making regular building inspections. A card record of installations is maintained in our Division of Fire Prevention and Record files.

Officers and members of the department know the locations of Fire Department connections, valves, pumps, etc.

On specific request from owners of sprinklered buildings, we have on occasion shut off wet type systems, when the building has been evacuated during severe weather. The fact that the sprinkler protection has been temporarily abandoned is reported to all companies of the Fire Department and such information duly recorded in journals and on blackboards.

Charles H. Roberts, Chief Inspector, Orange, N. J.: In inspecting automatic sprinkler systems the gates are looked over to see that they are opened to allow water to feed into the sprinkler systems for use in case of an emergency. The piping of the sprinkler system is all inspected to see if in my opinion pipes are large enough to carry a good pressure and flow of water. I have never tested pressure by gauge, as I have been informed by owners of garages, etc., that representatives of insurance companies have tested them and if there would be anything the matter with them the Bureau would be informed. There are very few buildings in our city that have outside steamer connections.

Arthur E. Chambers, Chief, Yonkers, N. Y.: We maintain an inspection bureau which covers automatic sprinklers, as well as the general mercantile district safety measures, particular attention being paid to stock, insuring that it is not piled so as to obstruct proper radius of sprinkler operation, that heads are not clogged by paint or other obstructions, and that outside connections are kept in working order.

Automatic sprinklers are inspected by our men, who make it a point to be present when representatives of the sprinkler agencies notify us that they plan to test a certain system. Department tests are made when a sprinkler system has been in operation, at which time, the system is drained, used heads replaced and system tested and placed in working condition before we leave the premises.

Company commanders, as well as our inspection bureau, know locations of outside connections, control valves, fire pumps, and whether system is supervised by suitable electric system.

J. N. Sullivan, Chief, Utica, N. Y.: The Fire Prevention Bureau makes an inspection of all sprinkler systems at

HERE IS THE PROBLEM

What supervision do you maintain over automatic sprinkler systems?

Do you inspect and test them?

Do company officers know location of outside connections; of control valves; of fire pumps; and whether system is supervised by a suitable electric system?

least four times a year. Sprinkler systems in theatres and places of public assemblage are inspected at least once each week. The Fire Prevention Ordinance gives the Bureau supervision over these systems.

During the inspection by company officers of the same systems at least twice each year, tests are sometimes made in the presence of inspectors for insurance interests.

Each company officer knows the location of all Fire Department connections as well as control valves of all sprinkler systems within their district. A permanent record is kept by each company with a detailed sketch of the building showing connections and control. In addition, the Salvage Company carries a card index, with a detailed map, showing the controls in all sprinkler systems throughout the city. Some sprinkler systems are supervised by the A.D.T. system.

Napoleon Taupier, Chief, Pawtucket, R. I.: We do not supervise the maintenance of automatic sprinklers in this city. They are taken care of by the different concerns owning them.

Sprinklers are inspected and tested regularly by men employed by these concerns and also by insurance men at different intervals.

Officers and men of the Fire Department learn the locations of outside connections, control valves, fire pumps and any other information pertaining to sprinkler systems. In the course of their inspections of the different buildings they also see that there are no obstructions around shut-offs, so that there will be no delay in getting to the shut-offs in an emergency.

R. E. Mottesheard, Chief, Dearborn, Mich.: We check all building plans of Type 1, 2 and 3 construction. Our building code is quite plain in specifying Fire Protection appliances according to construction and occupancy. Therefore, we check very closely to see that the building code requirements are carried out.

We inspect the systems to determine their general condition as to maintenance and occasionally observe tests conducted by the owner or insurance company. If defects or lack of proper maintenance is observed, the proper authorities are notified.

All P.I.V. and siamese valves are inspected regularly by members of the Fire Department, who are detailed daily to inspect city hydrants. Our entire city is covered weekly, and doubtful hydrants and connections are examined oftener.

Officers are schooled in the location of control and drain valves of the several systems in the buildings, also the type of supervision.

John J. Towey, Chief, Newark, N. J.: Automatic sprinklers when properly installed and supervised and otherwise kept in proper working conditions, have so effectively proven their ability to extinguish fire or check it until the arrival of the Fire Department, that we cannot ignore their usefulness in our pursuit of safety from loss of fire.

To assure ourselves of this safety, we officials of the city of Newark, N. J., have a standard set of regulations inserted in our code relative to the installation of such automatic sprinkler systems, which read as follows:

I. Every existing and new building exceeding 2,500 square feet of area, which is occupied for mercantile or manufacturing purposes and which constitutes a fire hazard in the opinion of the Fire Commissioner and the Superintendent of Buildings, shall be protected throughout with automatic sprinklers.

II. Every existing and new building used or intended to be used for the manufacture, storage or sale of explosive or inflammable material such as gasoline, naphtha, lacquer, gun cotton, benzole, toluol, celluloid, cellulose or other plastics shall be protected throughout with automatic sprinklers.

III. As stated under Article II, of the Building Code, all buildings of a given height and area shall be protected throughout with automatic sprinklers.

IV. In every existing and new building in which any cellar or story below the first or grade story is used or intended to be used for the manufacture, storage or sale of any inflammable material whatsoever, such cellar or story shall be protected throughout with automatic sprinklers.

V. All garages having an area of 10,000 square feet, or more shall be sprinklered.

VI. All hotels and apartment houses containing stores; hereafter erected or altered, shall have the stores and the basement sprinklered.

VII. All buildings used or intended to be used for furniture storage shall be sprinklered.

Sprinkler systems shall be classified as:

a. Automatic Wet Pipe Systems, in which all pipes and sprinkler heads are at all times filled with water.

b. Automatic Dry Pipe Systems, in which all pipes and heads are filled with air, either compressed or at atmospheric pressure, and water supply is controlled in a dry pipe valve.

c. A Deluge System, in which the pipes are dry, the heads are open, and the water supply is controlled by thermostat operating valves.

Tests:

After completion, new sprinkler systems, including the water supply, shall be subjected to a hydrostatic pressure of at least one hour's duration, at not less than 50 pounds in excess of the pressure which will be normally carried. Such test pressure to be not less than 150 pounds per square inch in any part of the system.

Pressure tanks shall be tested to one and one-half times the working pressure.

In automatic dry pipe systems, an air pressure of 40 pounds per square inch shall be held for twenty-four hours with a drop not exceeding two pounds.

Each sprinkler system shall be connected to two or more approved sources of supply; the Fire Department siamese connections shall be accepted as one source of supply. All sprinkler systems shall be entirely separate from standpipe systems.

Gravity and pressure tanks—City high and low pressure mains in buildings not exceeding 100 feet in height, Fire Department steamer connections and other sources as approved by the Fire Commissioner and the Superintendent of Buildings.

Direct connection to city water supply shall give not less than twenty pounds pressure per square inch at the highest line of the sprinklers below the main roof.

An approved air compressor having a capacity of not less than eleven cubic feet of air per minute shall be installed for each dry pipe system.

All gravity tanks shall contain enough water to supply twenty-five per cent of the number of sprinkler heads in the largest protected fire area for twenty minutes, but not less than 5,000 gallons. The bottom of these tanks shall be twenty feet above the highest line of the sprinkler below the main roof. Tanks shall be supplied at a rate of not less than sixty-five gallons per minute.

When a gravity system requires a tank capacity exceeding 25,000 gallons, the amount of water in excess of 25,000 gallons shall be provided for in separate tanks not grouped together.

Gravity tanks on structures entirely independent of the building itself may be of unlimited capacity. However, the bottom of all such tanks shall be twenty feet above the highest line of the sprinkler it supplies.

Pressure tanks shall contain sufficient water to supply 12.5 per cent of the sprinkler heads in the largest protected fire area, for twenty minutes, but not less than 3,500 gallon capacity for a wet pipe system, and not less than 5,000 gallons capacity for a dry pipe system.

All equipment tanks shall be protected against freezing.

All tanks shall be provided with approved overflow pipes, emergency drains, high and low pressure alarms and flow tell-tales. Tanks exposed to weather shall be heated with brass steam coils within the same.

All tanks shall be equipped with a check-valve and necessary gate valves.

When the pressure is not sufficient to give twenty pounds pressure at the highest line of sprinklers, it may be augmented by an approved 500-gallon automatic fire pump, that will maintain twenty-five pounds pressure at the highest sprinkler line at rated capacity. Such pumps may be used in buildings not over 80 feet high, with not more than 100 sprinkler heads in the longest area. Suction for the pumps to be of the same size as that in the main riser.

Fire pumps shall be of approved size and connections to the city mains or other approved sources that will give a 60-minute supply. The rated capacity shall not be less than 500 gallons per minute, and shall be able to supply 25 per cent of the sprinklers in the largest area of any building.

All automatic sprinklers shall be provided with at least one siamese connection of approved type on each street front. Buildings with a frontage on one street, exceeding 300 feet, shall be provided with at least two siamese connections. Where a building fronts on the water a standard siamese connection shall be installed for fire-boat use. Cast iron screw caps on siamese openings will not be permitted.

"All siamese hose and steamer connections shall be from twelve to eighteens inches above the ground and of standard Newark Fire Department size and thread. Connections must be equipped with a ball drip valve and check valve.

"A suitable iron plate with raised letters shall be securely attached to the building wall near each siamese steamer connection, reading, 'Cellar Sprinklers,' where sprinklers are installed in cellars only, and reading 'Automatic Sprinklers,' where the entire building is so protected.

"Pipes and heads shall be properly protected against mechanical injury, corrosion and freezing. Heads shall not be painted.

"All sprinkler pipes and fittings shall be so installed and equipped that they can be thoroughly drained. No drain pipe shall be connected directly to a city sewer.

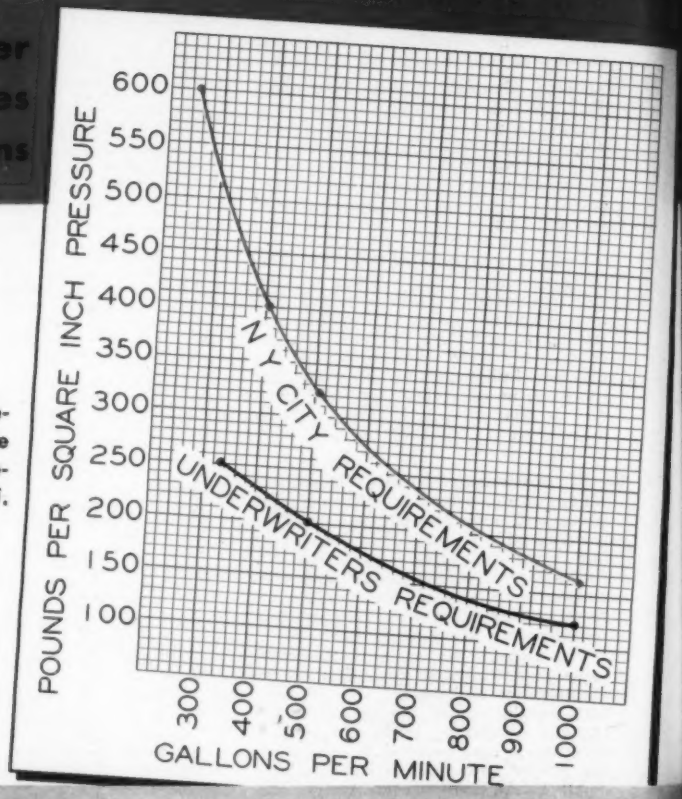
"All wet pipe systems shall be provided with a test pipe three-quarter inches in diameter, the location of which must have the approval of the

THE DISCUSSION WILL BE CONTINUED

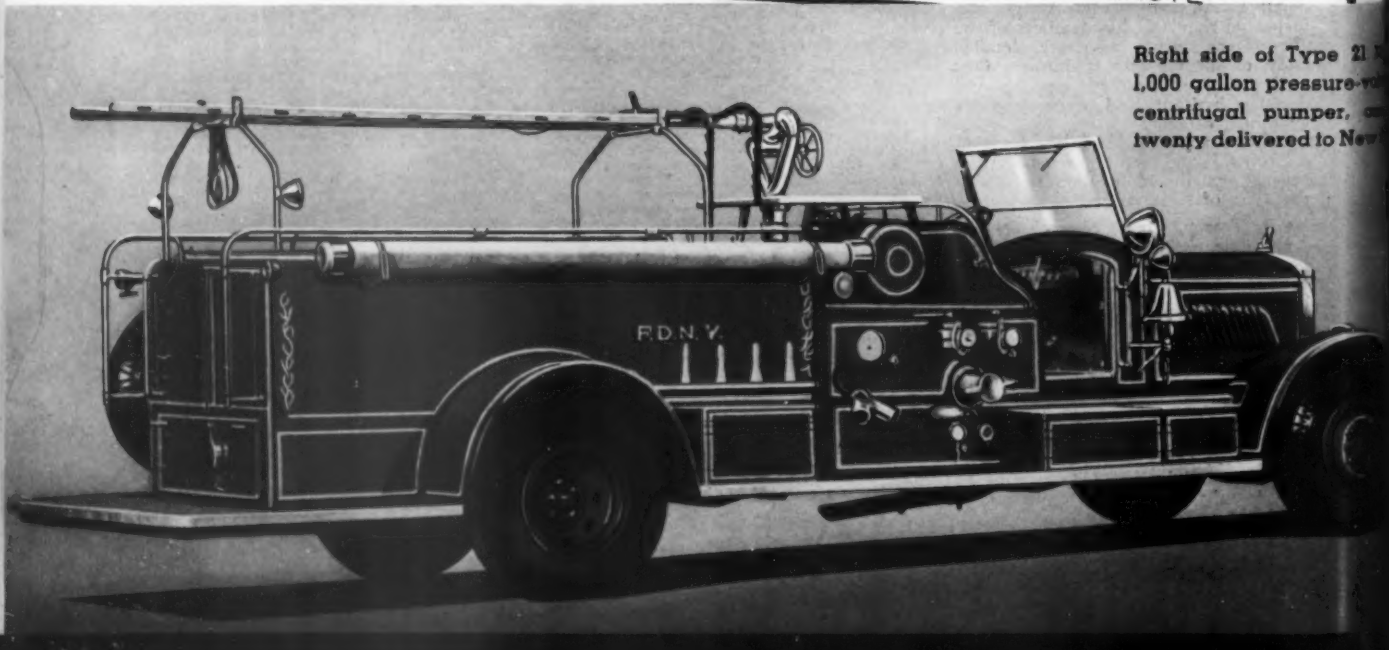
Due to many and lengthy discussions of this question, and the limited space available, it has been necessary to continue the discussion of this problem in the next issue.

MACK DELIVERS 20 PUMPERS TO NEW YORK CITY

Metropolis Accepts Largest Order of High-pressure Pumping Engines under Most Stringent Specifications



Comparison of pumping requirements specified by New York Fire Dept. for the 20 new Mack pumpers contracted with N. B. F. U. standards



Right side of Type 21 M 1,000 gallon pressure-v centrifugal pumper, o twenty delivered to New

...side of one of twenty Mack ...pe 21 double-combination ...mpers delivered to City of New York

FULLY satisfying requirements more stringent than ever previously specified, twenty Mack pressure-volume centrifugal pumping engines have just been accepted by the City of New York for high-pressure pumping service. Rated at 1,000 gallons per minute, these engines have six-cylinder power plants with four-stage centrifugal pumps, 2,000-gallon deck pipes connected directly with their pumps and carry 1,400 feet of hose each. The unusually severe pumping requirements are illustrated by the graph on the opposite page.

MACK TRUCKS, INC.
FIRE ENGINE DIVISION

Mack

25 BROADWAY
NEW YORK, N.Y.

Fire Commissioner and the Superintendent of Buildings.

"All automatic sprinkler systems shall have approved electric and hydraulic alarm gongs.

"Floor or wall openings or other structural defects which prevent the banking up of heated air, retarding the automatic action of sprinkler heads, shall be provided with necessary approved curtain boards and draft stops, to permit specific control of fire by the local sprinklers."

Aside from these regulations concerning the installation of sprinkler systems, we also introduced a city ordinance relative to fire prevention and fire protection as rendered by these systems already installed in many buildings throughout our city. This ordinance was passed and adopted by the Board of Commissioners and was put into effect on July 17, 1935, sections of which read as follows:

"Section 1. It shall be unlawful for any person, or persons, firm or corporation, to shut off, disconnect, obstruct, remove or destroy any part or parts of any sprinkler system, standpipe, water main, hydrant or other device or equipment for fire prevention or fire protection in any building or on any premises in the city of Newark, except as hereinafter provided.

"Section 2. The owner or occupant of any building or any premises equipped with fire prevention or fire protection devices, whenever it shall be deemed necessary, may shut off, disconnect or remove any such equipment or device for a period of time, not longer than sixty minutes.

"Section 3. Whenever the owner or occupant of any building or premises equipped with fire prevention or fire protective devices shall deem it necessary to shut off, disconnect or remove any such equipment or devices for a period longer than sixty minutes, such owner or occupant shall notify the Chief Engineer of the Fire Department of the city of Newark, and it shall be the duty of the Chief Engineer or Acting Chief Engineer to supervise any permitted shut off, disconnection or removal.

"Section 4. Any person, firm or corporation, who shall violate any of these provisions of this ordinance, shall, upon conviction thereof, be subject to a penalty of not more than $200, or imprisonment for a period not to exceed ninety days, or both."

Prior to the adoption of this ordinance, owners and occupants of buildings equipped with these devices would shut off or disconnect them at their own will never notifying the department of the action they had taken.

In several instances the owners having discovered minor leaks or defects in the systems simply had them shut down to await the arrival of the mechanic called to make the repairs, which at times took from several hours to several days.

In severe cold weather the same systems were shut off for fear of rupture by freezing, all unknowingly to our department.

Today when a system is shut down for any reason whatsoever, and the Chief Engineer is notified, the Battalion Chief and the first alarm companies due to such sprinkler location are immediately informed that the system has been temporarily shut down for whatever time stated.

Tests on all these systems are made at least twice a year, by an inspector especially selected for this line of work. All automatic alarm gongs and electrical devices connected with the systems are tested as to their operation in case of actual fire.

Every company officer must inspect all sprinkler systems within his respective building district at least twice a year. They must submit a duplicate report made out on standard Fire Department forms.

Officers must see that all connections are free in operation and kept well greased and oiled. If this is not the case and certain connections are hard to operate, such happenings must be brought to the attention of the owner at once.

Outside siamese connections are greased and oiled twice a year by firemen detailed from companies covering these so equipped buildings.

Besides sprinkler systems, all standpipe systems and all hydrants in the city are also greased and oiled in the same manner.

Experience has taught us to be extremely cautious when inspecting siamese connections or hydrants equipped with the type of screw caps.

Three serious dangers are connected with the use of such caps:

If a cap should become so corroded due to the lack of oil or grease and where no wrench can be applied but the use of a hammer is resorted to in order to remove the cap, injury to the thread on the nipple may result making the connection useless.

If a cap is missing, children playing in the vicinity of such capless openings may be prompted to insert sticks, stones, dirt or other materials which will hamper successful operation of such devices.

If a cap or several caps should be missing, possibilities of rupture by freezing may occur in severe cold weather.

Therefore all officers and members whether on duty or off duty are strictly required to pay attention to these caps and immediately report all defects concerning them to the proper officials.

C. J. Henry, Chief, Lexington, Ky.: This department does not supervise the sprinkler systems in the city. The Kentucky Actuarial Bureau makes all recommendations for the installation and upkeep of the systems, and where the building is over five stories in height, they require a storage tank on top of the building to boost the pressure to a sufficient poundage to properly operate the system.

We do not inspect or test the system. It is done by a member of the Kentucky Actuarial Bureau, but sometimes a member of this department accompanies a Kentucky Actuarial Bureau man on these trips.

All buildings are inspected by all members of the Fire Department, and before going out on inspection, these men are especially cautioned to learn the exact location of all outside engine connections, control valves and any other information pertaining to the sprinkler system. In this connection, we have an individual report on file in the office, and this report covers every detail as to the location of all valves of sprinkler systems, gas shut off valves, floor openings, hazardous contents, etc., and these detailed reports are studies in the department by all officers and members of the department.

The systems in this city are not supervised by a suitable electric system, excepting a bell that sounds on the outside of the building any time a head is fused.

I am assuming by your statement of "suitable electric supervision" that you mean that the system is connected with a supervised A.D.T. system. Several of the owners of sprinkler risk buildings have signified their intentions of having the system connected with the local A.D.T. system, but to date nothing has been done along this line.

Rufus A. Crittenden, Chief, Haverhill, Mass.: Automatic sprinkler systems in Haverhill, Massachusetts are supervised and maintained by an organization known as the Haverhill Board of Trade Associates. This organization employs a test man for that purpose.

The automatic sprinkler systems are inspected and tested monthly by the test man employed by the Haverhill Board of Trade Associates and when conditions require they are tested and inspected between the regular monthly inspection dates.

Fire Department inspectors also inspect these systems when making inspections in buildings where such systems are located. This inspection includes checking off to see if valves controlling the system are properly set, if passage to aisles leading to valves are unobstructed, and if merchandise is piled too near sprinkler heads or too high in the building to prevent the efficient operation of these heads.

Buildings, where sprinklers are shut off due to lack of heat or because of building being unoccupied, are included on regular inspection visits by the Fire Department inspectors and a check made as to conditions and whether the building is properly secured.

Company officers frequently inspect entire sprinkler systems checking on the location of outside standpipe connections, seeing that they are in proper condition for immediate use, and inspection is also made of the location and condition of the controlling valves, what parts of the system they control, the location and condition of floor or sectional valves, water curtain valves, and whether cold weather valves are on or off depending upon the season of the year governing same. Such systems that maintain fire pumps are inspected and a check made to see if the pump is in operation or not, who has charge of it, and whether engineer service is provided during both day and night.

Automatic sprinkler systems that are connected to the fire alarm system are supplied with electric current from the fire alarm system, which system has facilities for consuming public service current as well as generating its own supply of electricity through the use of storage batteries. Such systems as are not connected to the fire alarm system are largely dependent upon the water or rotary gong for alarm purposes. Various type clocks are in use on the automatic sprinkler alarm systems and those using dry cell batteries as part of the equipment are checked by the test man employed by the Haverhill Board of Trade Associates and replaced and maintained by the organization as needed.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Bursting Pressures, Etc.

To the Editor:

1. The bursting ring tension per square inch in a 3½-inch inside diameter hose is how many pounds when the water pressure in this hose is 60 pounds per square inch?

2. The total normal pressure against the side of a tank 10 feet high and 10 feet long amounts to how many pounds when the tank is full of water? There is no cover on the tank. A. D. G.

Answer 1: In the first question the bursting ring tension per square inch is not quite clear. It is easy enough to determine what the tension is per inch length of the hose, or coupling, but as the thickness of the hose is not known nor the cross sectional area of the portion of the coupling under tension, the tension under which it is placed per square cannot be determined.

However, the tension, or stress, per inch length of hose can be given.

The tension under which the hose is placed is found by multiplying the diameter by the pressure in pounds per square inch, giving us 210 pounds per inch length of hose. As there are two thicknesses of hose withholding this strain, on each side of the circle the tension at any point in the hose would be 105 pounds per square inch per inch length of the hose. This is the tension that tends to burst the hose, or tear it apart.

Answer 2: The wall of the tank is 10 feet high and 10 feet long, having an area of 100 square feet, or 14,400 square inches.

The average pressure on the wall of the tank is equal to 10 ÷ 2 x .434. The latter figure is the pressure in pounds per square inch due to one foot elevation of water. Thus the average pressure is 2.170 pounds per square inch.

The total area is 14,400 square inches so that the total pressure on the side of the tank will be 14,400 x 2.17 or 31,248 pounds.

Standpipe Pressure

To the Editor:

With reference to question and answer appearing in the July, 1935, issue, entitled "Pressures from Standpipe Lines," I would like the following additional information:

1. If only one line is taken from the standpipe line in lieu of three, as in this problem, say from the third floor, wouldn't the back pressure be figured for the total height of the column of water—303 ft., instead of 51 feet from basement to third floor? As in "C." Or, in other words, isn't there a pressure of 131.5 pounds on the down stream side of the pump check valve to be overcome before the check can be opened, no matter whether the line is taken from the 3rd, 12th or any other floor? That is, of course, if there is no check valve between the pump check and the point 303 ft. above and assuming that the 303 ft. point is the top of the line.

2. If the standpipe system were dry, that is, no water in it until supplied by the pump in the basement—

(a) Would it be necessary to fill the riser to the top before pressure could be built up on the line from the third floor? Assuming that this is the only line taken from the standpipe.

(b) In this connection, if due to fire conditions, the outlet valves on the upper floors of the riser cannot be opened to relieve the air while the riser is being filled, is there any method of figuring how much air and how much water there is in the riser when full? In other words how can we figure how long it will take the pump to fill the riser, assuming only one 6-inch riser in the system, 303 ft. in height and dry? D. C.

Answer 1: Yes, the total pressure of 131.5 pounds is holding the check valve in the standpipe closed, and this must be opened by the pressure from the pump before any water can be delivered by the pump to any of the lines on the various floors. Of course, any line may be opened and will have a pressure depending upon the height of the surface of the water in the tank above the nozzle. But if water is to be delivered by the pump, the check valve must be first opened against the pressure of 131.5 pounds before the pump can deliver water to the standpipe.

Answer 2 (A): If the standpipe is dry, it will not be necessary to fill the riser to the top, before pressure can be built up on the line from the third floor. Just as soon as water is delivered to the standpipe and the level of the water in the standpipe reaches a point above the outlet to the hose line on the third floor, then there will be some pressure at this nozzle. The pressure will depend entirely upon height of the surface of water in the standpipe above the nozzle.

Answer 2 (B): If the upper valves of the standpipe cannot be opened, to free it of air, while it is being filled, the air will be imprisoned therein above the outlet to which water is being delivered to a hose line. As the pressure is increased in the standpipe, the air is compressed. For example, if the pressure of the water on the air is doubled, the volume of the air imprisoned will be reduced one-half. If the pressure of water is increased four times, the volume of the air imprisoned will be but one-quarter the volume.

It would not be possible to completely fill the standpipe, if air were locked in the riser. The volume of the air could be reduced by increasing the pressure, but there would, of course, be a limit to the pressure produced by any pump.

If the pump were driven by a motor of constant speed, it would be possible to calculate how long it would take to put the maximum amount of water into an air locked standpipe. But it would be necessary to know what the maximum operating pressure of the pump would be.

Stream Velocity, Nozzle Pressure, Etc.

To the Editor:

Will you kindly solve the following problem:

A 2½-inch line of hose, 200 feet long, is put into operation. The nozzle is 1½-inch diameter and discharges 415 gallons per minute. What is the nozzle pressure? What is the pressure required at the engine? What is the velocity of the water issuing from the above nozzle? P. H.

Answer: To solve for nozzle pressure where the discharge in gallons per minute and the nozzle diameter are known, we employ the discharge formula which is as follows:

Discharge $= 30 \times d \times d \times \sqrt{p}$.

Where the discharge is in gallons per minute and d, the nozzle diameter in inches; p, the pressure in pounds per square inch at the nozzle.

In this formula we substitute the values which we know and then solve for the unknown.

Putting in values for the discharge and nozzle diameter, we got

$415 = 30 \times 1\frac{1}{4} \times 1\frac{1}{4} \times \sqrt{p}$.

$415 = 46.875 \times \sqrt{p}$.

$415 \div 46.875 = \sqrt{p}$.

$8.853 = \sqrt{p}$.

And then squaring each of the sides of the equation, we get $78.375 = p$ or the nozzle pressure. Thus the nozzle pressure is approximately 78 pounds,

which figure we will use in the calculations.

To find the engine pressure we use the engine pressure formula which is as follows:

E.P. = N.P. x (1.1 + K x L).

Where K is a factor depending upon the hose and nozzle diameters and is, for 2½-inch hose and 1¼-inch nozzle, .248; L, the number of 50 foot lengths of hose in the line is 200 divided by 50, or 5.

Then E.P. = 78 x (1.1 + .248 x 4).
= 78 x (1.1 + .992).
= 78 x 2.092.
= 163 pounds approximately.

The velocity of the stream is secured by the following formula:

Velocity (feet per second) = $\sqrt{2\ g\ h}$.

Where g is the acceleration due to gravity and is commonly taken as 32; h, the head in feet is equal to the nozzle pressure x 2.304.

Then velocity equals the square root of 2 x 32 x 78 x 2.304.
= $\sqrt{11501.568}$.
= 107.25 feet per second, approximately.

ALUMINUM GAINING IN USE IN CONSTRUCTION OF FIRE EQUIPMENT

Ladders and Nozzles Noteworthy Examples of the Use of This Lighter Metal in the Fire Service

By W. S. McArdle

THE past few years have witnessed a drastic change in the design of fire-fighting equipment. Equally noticeable has been the trend toward more modern materials, intended to promote greater speed and safety.

In much of the newer equipment, aluminum has found an important place. The metal is not only light in weight but strong and durable. Equipment made of it is easy to handle, while the fact that moisture has comparatively no effect on aluminum is a decided advantage in terms of dependability and economy.

Aluminum Used in Fire Trucks

In the construction of fire trucks, the increased efficiency resulting from the use of the metal is significant. A truck used in California by the Division of Forestry is a typical case in point. In this unique "cross country" fire wagon, employed for fighting grass and brush fires, aluminum is utilized for water tanks, seat backs, fenders, pipes and fittings, tool boxes, structural members and rear platform. As a result of the lightening of this equipment, the water-carrying capacity is increased by 50 per cent. In fighting fires miles from the nearest hydrant, this increased capacity is of vital importance.

At New Kensington, Pa., experiments have been carried on with aluminum equipment for a number of years. Several of the trucks used by the local Fire Department have been aluminized to such an extent that the applications include not only the bodies, but the miscellaneous equipment in the trucks as well.

While weight saving in pumping engines and chemical carriers is entirely feasible, it must be remembered that hook and ladder units present a somewhat different picture. Here, a low center of gravity must be maintained to permit taking corners at high speeds and to balance the weight of the ladders when they are in an extended position. Elimination of dead weight must obviously be made uniformly, and bodies should be lightened only with corresponding lessening in the weight of the ladder structures.

The Aluminum Ladder

Perhaps the most important use for aluminum in the fire-fighting industry, to date, is its application for ladders. For years, Fire Chiefs have realized the inadequacy of the older types of ladder; but until aluminum ladders were introduced, comparatively little was done about improvement of this class of equipment. However, at the present time, there are several firms actively engaged in the production of light alloy ladders.

Lightness and strength constitute the chief reasons for the use of the aluminum ladder. It is fireproof and, in addition, presents no slivery surfaces to injure the firemen's hands. Welded joints make rungs and sides virtually a single unit.

At the Illinois Firemen's Convention, held last fall, a 100-ft. aerial ladder made of aluminum was exhibited. It constitutes the first ladder of its type ever constructed. The ladder is built in three sections, a base section, midsection and fly section. Combined weight of these three sections of the ladder is 1,322 pounds. Numerous smaller fire ladders have been built of aluminum for use in various parts of the country.

Nozzle Tips and Water Curtain of Aluminum

Ordinarily, nozzle tips are made of heavy metals, and nozzles weighing as much as 20 pounds or more are not unusual for large hose. A New Jersey manufacturer is now marketing a nozzle made of aluminum; it weighs but 10 pounds—just half the weight of its predecessor.

Another product of this same firm is an aluminum water curtain—a practical device which permits water to be released in a curtain, over a large area. In fighting fires, this implement is employed chiefly to screen firemen from heat while they fight fires at close range. Another use for these water curtains is to protect roofs and walls of adjacent buildings, as well as oil tanks and other equipment which present surfaces that are too large to be covered adequately by single streams. An unofficial use for this water curtain is that of a shower for children on hot summer afternoons.

An Aluminum Ladder Demonstrated at the Illinois Firemen's Association Convention

Tubing for Fire Extinguishers

Often tubing for fire extinguishers is made of aluminum. Work is being carried out at present on aluminum casings for extinguishers of the carbon-tetrachloride type.

The traditional fireman's hat is another item which has undergone modernization at the hands of aluminum. The newer metal helmets are stronger than the older types of helmet, and much lighter. They also offer greater head protection and at the same time may be worn with greater comfort. Furthermore, they are cooler, which is an important item at a fire.

McElligott Demotes Chief Kidney

David J. Kidney, Assistant Chief of the New York Fire Department, was demoted by Commissioner John J. McElligott to the rank of Deputy Chief, and his salary was ordered reduced from $6,980 to $5,810. Deputy Chief Joseph O'Hanlon, was advanced from his command in Brooklyn and Queens to Assistant Chief, with a corresponding increase in salary. Deputy Chief George T. McAleer, of the Tenth Division, was given Chief O'Hanlon's old post. No explanation was given for the transfers.

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The *New* and *Improved* *Offers*

STREAMLINED

C-5 COASTER SIREN

WITH FLASHING LIGHT

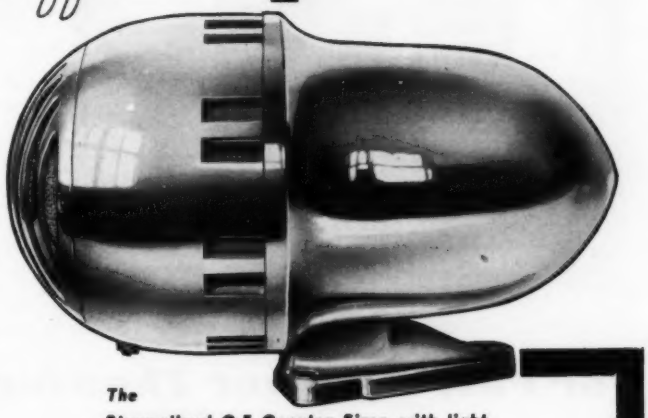
■ Triple—three-in-one—action in a powerful streamlined C-5 Coaster Siren that commands instant attention is attributed to:

1. SOUND of a new compelling tone.
2. LIGHT that flashes on and off with siren roar.
3. ECONOMY—it actually coasts for more than 120 seconds.

Think of it—more than two minutes after current is shut off—that saves your battery. Greased sealed ball bearings add to ease of operation. Rugged in construction—fully chrome plated with strong candlepower light behind screened grille.

Safety—Speed Assured

■ Strong beams of light flashing on and off with siren roar floods streets with noise and light for blocks ahead, protecting lives, property and expensive fire fighting equipment. Federal Electric engineers are first with the latest improvements in warning signals. Don't accept low priced substitutes—buy the best—it is cheapest in the long run.



The Streamlined C-5 Coaster Siren with light. With or without electric brake.

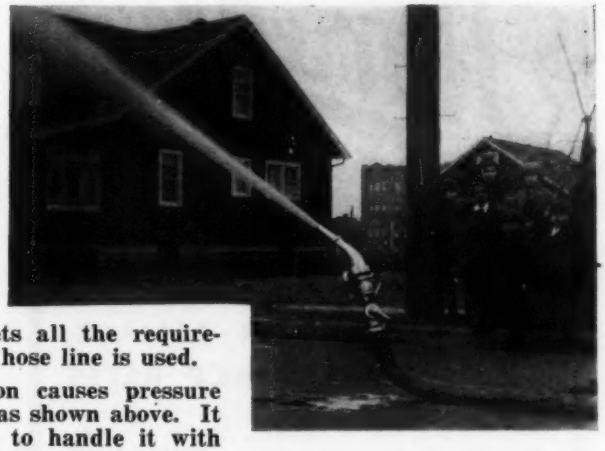
■ The electric brake is another added feature applied to the C-5 Coaster Siren. The application of the electric brake by the simple touch of a button instantly silences the siren roar, especially when in a zone of quiet.

FEDERAL ELECTRIC COMPANY 8702 SOUTH STATE STREET CHICAGO, ILLINOIS

GILSON *All Angle* NOZZLE

CAT. NO. G-840

WITH BACK PRESSURE CONTROL



Keeps its position on the ground or pavement, under pressure, without whipping around.

This is a standard nozzle designed for any purpose, and meets all the requirements wherever a 2½" hose line is used.

Scientific construction causes pressure to support the nozzle, as shown above. It requires but one man to handle it with the pressure on.

The swivel connection allows the stream to be aimed in any direction without turning the hose line.

DEMONSTRATIONS GIVEN WITHOUT OBLIGATION

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Thaws Hydrants in 2 Minutes in Sub-Zero Weather

An Absolute Necessity During Freezing Weather

NOW that old fashioned winters are here again it is up to every fire department to provide themselves with an efficient thawing device.

The BRYAN Steam Thawing Unit is a compact, dependable oil burning steam generator, easy to operate and maintain. It is priced reasonably enough so that any department can own one. Fifteen of these units are now being used by New York Fire Department.

For Fast Hydrant Thawing in Freezing Weather

BRYAN STEAM THAWING UNIT

This unit is indispensable for thawing hydrants, manholes, water mains, switches, curb drains and keeping fire apparatus free of ice.

We suggest you write now for prices and complete information.

Don't let another bad winter catch you napping.

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Shuredry SALVAGE COVERS Reduce

WATER DAMAGE & INSURANCE RATES

Better fire records through improved salvage work earn lower insurance rates for taxpayers. Leading chiefs endorse Shuredry Salvage Covers as a dependable and economical means of reducing loss from water damage. Shuredry Covers are chemically treated by our special process. They resist both heat and cold, will not crack or split on storage shelves. Shuredry Covers are easy to handle and give better and longer service.

Write to our nearest plant for full information and prices.

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Manufacturers Since 1870
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REPLACE THAT OLD COAT
WITH A BRAND NEW
MIDWESTERN FIREMEN'S COAT

Has this severe winter we have just gone through raised HOB with your coat? In a few days Spring will be here. NOW is the time to get that new waterproof, soft, flexible, good looking and long wearing coat with the famous safety snap—it is made and sold only by Midwestern. And you can't buy a better coat at any price.

Treat Yourself to a Midwestern Coat—Now

BEWARE OF CHEAP IMITATIONS

Look for the double eagle label on the coat you buy.

Write for our Free Illustrated Catalog showing complete line of our rubber and canvas garments. Satisfaction Guaranteed.

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Midwestern Manufacturing Company
MACKINAW, ILLINOIS
Manufacturers of a Complete Line of Quality Firemen's Clothing

Our inquiring reporter overhauls the firemanic news of the day.

Not Even White House Inviolate

Fire inspectors looked over White House one day in January, but President Roosevelt seemed surprised when informed about it. Executive said, however, he was glad inspectors were there, remarking incidentally that two fireplaces had been smoking. Perhaps firemen's zeal was inspired by recent serious blaze in Government records?

Woman Makes False Alarm Real Fire

Firemen answered a false alarm in St. Louis (Mo.). Mrs. Loretta Schmide, aged 28, leaning from window to watch baffled blazebeaters, ignited her dress against stove. Shrieking, she ran into the street. Firemen looking for something to do extinguished flaming dress but not before Mrs. Schmide was badly burned.

Firemen Have Rights—and Lefts

Volunteer firemen of town of Mamaroneck (N. Y.) called to extinguish fire in apartment were refused entrance by superintendent. After a fracas, F. D. called police who pinched super. Chief LeVino carried matter to court, won decision, then asked Magistrate Messersmith be lenient with culprit. The one day jail sentence suspended. Local newspaper ran an editorial—"You Can't Hinder Firemen,"—backing up Vol's.

'Nother Sun Stroke Fire—at 15 Above

Believe it or not, with thermometer reading 15 degrees above zero in Boston (Mass.) sun caused fire in liquor store of T. F. Horrigan, says F. D. Report, gave as cause: "Sun came through window and concentrating on a whisky bottle, set fire to wall." Boy, what was name of that likker?

Fire Wrecks F. D.

Talk aboue "shoemaker's children" here's another F. D. burned out. This news from Pennsauken Township (N. J.), where blaze in Bloomfield Park firehouse destroyed structure and two fire trucks. Loss said to be $10,000, not covered by insurance. Next . . . .?

Banished Vamps Beat Blaze

Vol's of Bloomfield (N.J.) refuse to be abolished. For half century they fought fires, then were side-tracked for pro's, but continued to turn out on 2nd alarm. Recently the Town Council abolished 'em completely. But when fire broke out in First Baptist Church at 2:17 of a cold morning and Chief George Koeber sounded a 2nd, the vol's said *à bas* to *les banishment* and rushed to do their duty. 'Tis said their services were welcome, as during the church blaze, plant of International Hosiery Company also had fire, calling some of the pro's away. Fourteen hours later, Vol's—those who were left—were still sticking—in spite of frozen digits and ruined "Sunday Suits."

WHAT DO YOU KNOW?

The Editor of "The Watch Desk" welcomes contributions from readers of FIRE ENGINEERING that briefly give facts about interesting, odd things that have to do with fires, fire-fighting, etc. Address "Editor, Watch Desk."

Fire Threatened Greenwich, Conn.

The business district of Greenwich, Conn., was threatened on February 22, when a general alarm fire swept through six stores, with apartments above them, at 157-171 Greenwich Avenue, causing damage estimated between $150,000 and $200,000. All Greenwich fire-fighting units, augmented by apparatus from Port Chester, N. Y., and East Port Chester, Cos Cob and Old Greenwich, Conn., battled the flames for six hours before bringing the fire under control.

Eight families fled the buildings and lost all their household effects.

The fire started in the basement of the Casual Hat Shop, from a defect in the heating apparatus and mushroomed to adjoining buildings occupied by five stores. The buildings are of wood construction, the front being faced with brick.

The first alarm was sounded by a passerby at 8:58 p.m. Chief Isaac Hubbard, of the Greenwich department, stated after the fire that, due to a defect in the alarm system, the siren, which called all volunteers to headquarters, failed to blow.

The buildings located opposite Fire Headquarters were engulfed in dense clouds of smoke. With the arrival of other fire apparatus from neighboring towns, hose lines were placed on the roofs of adjacent buildings and the firemen battled the flames continuously until 3 a.m., before every trace of fire had disappeared. All that remained of the buildings after the fire were the brick fronts and roofs.

THOMAS F. MAGNER.

New York City Has Lowest Loss in 20 Years

Fire losses in New York City for the past year were the lowest that the city has enjoyed in twenty years, according to information revealed by Chief John J. McElligott. The losses were $8,731,565, a decrease of $694,950 from the 1934 losses, although the number of fires were 746 more than in 1934. In 1935, there were 27,802 fires as against 27,056 in 1934.

There were 7,673 fires in tenement houses or 170 less than the previous year. Eight firemen lost their lives and 1,334 were injured.

Chief McElligott said that the intensive campaign against false alarms, conducted in cooperation with the Board of Education, and other city departments, had cut the number of false alarms from 13,131 in 1934 to 11,274 in 1935. Last year 338 persons were arrested for sending false alarms.

Chief Bogardus Over Fifty Years in Service

George Washington Bogardus, Chief and "grand old man" of the Norwalk, Conn., Fire Department, became 70 years of age on February 22, and quietly observed the three-score-and-ten mark.

The veteran Chief will also have served 52 years in the department in April. He is hale and hearty and insists he feels "good enough to handle this job for many more years."

Members of his department held an informal birthday party at Central Fire Station. Deputy Chief Charles Volk presented the Chief with a gift from members of the fire-fighting force.

Chief Bogardus is one of the oldest fire Chiefs in the state of Connecticut and takes an active part in state and national conventions. He first received his salary as a paid fireman in 1910 when he was made driver of the horse which pulled the chemical engine. He was also volunteer Chief of the South Norwalk department at one time.

T. F. MAGNER.

Gases, Chemicals and Hazardous Materials

(*Continued from page* 97)

It is an oxidizing material, and classes as a fire hazard with sodium nitrate. While not dangerous to men at fires, outside of its increasing the intensity of the fire, it is poisonous when taken internally.

In storage it should be safeguarded against mechanical injury, and isolated. It has characteristics quite parallel to sodium nitrate, insofar as the fire hazard is concerned.

(*To be continued*)

Levi W. Thorston, Ex-Chief of the Fire Department in Rockport, Mass., died at his home on February 11 from pneumonia. He was seventy years of age.

WHAT'S BURNING

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of February, 1936. These figures, compiled from the telegraphic reports, are based on estimates made at the time, and are subject to later investigations and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Month Ending February 29	Loss in Thousands of Dollars
Louisville, Ky.—Merchants Wholesale Grocery Co.	50
Baltimore, Md.—Western Maryland Lumber Co., adj. property	80
New Britain, Conn.—United Building, destroyed	80
Madison, W. Va.—Riverside garage and contents, E. Priestly, owner	50
Amherst, N. S.—Empress Theatre and adj. property	60
Camden, Me.—Hughes woolen mill destroyed	50
Rochester, Ind.—Three business establishments	100
Ellenville, N. Y.—Four buildings at Canal and Market Sts.	65
Uniontown, Pa.—Plant of Dudley Electric & Machine Co.	70
Lyons, N. Y.—First Presbyterian Church destroyed	70
S. Rockwood, Mich.—Grist mill owned by John Strong estate	50
Bellevue, Ohio—Store and warehouse of McCormick-Deering Implement Co.	50
Edgemere, L. I., N. Y.—Democratic Club and adjoining property	800
Notre Dame de Grace, Que.—Villa Maria Convent damaged	65
Walkerville, Mont.—St. Lawrence Parochial School destroyed	80
Newport, Pa.—Gelnett Bros. garage and adjoining property	50
Carthage, Mo.—Business property destroyed	125
Mankato, Minn.—Landkamer Furniture Co. building damaged	65
Owensboro, Ky.—Elevator of Owensboro Grain Co. damaged	65
South Boston, Va.—First Baptist Church damaged	50
Machias, Me.—Washington State Normal School destroyed	50
Seguin, Texas—Main building and dormitory at Guadalupe College, several miles west	80
Utica, N. Y.—Apartment building at 1003 Park Avenue destroyed	50
Pawtucket, R. I.—Plant of Newell Coal & Lumber Co.	125
Knappton, Wash.—Store, hotel, and adjoining property	50
Fort Bragg, Cal.—Aulin building destroyed	80
Quebec, Que.—Property owned by Kirouac Toy Co. and adjoining building	80
Chicago, Ill.—Plant of Odman Paper Co. destroyed	125
Hazelton, Pa.—Convent of Mercy of St. Gabriel's Catholic Church	50
Columbus, Ohio—Odd Fellows Temple destroyed	200
St. Louis, Mo.—International Printing Ink Co. plant damaged	80
Nevada, Mo.—Bowker building destroyed	50
Detroit, Mich.—Plant of Michigan Feed & Grain Co. destroyed	80
Chicago, Ill.—Property of Arrow Match Co. destroyed	5
Lakewood, N. J.—Victoria Mansion Hotel destroyed	80
Niagara Falls, N. Y.—Coal sheds and yard of Geo. W. Maloney	60
Odebolt, Iowa—Coy building destroyed	50
Everett, Wash.—Property of Weyerhaeuser Timber Co. damaged	125
Lorain, Ohio—Lorain Hotel destroyed	80
Parkersburg, W. Va.—Palace Theatre destroyed	50
Greenwich, Conn.—Greenwich Avenue business property	100
Winchester, Va.—Apartment structure owned by F. L. Glaize, Sr.	50
Mory, Miss.—First Methodist Church destroyed	80
Pen Argyl, Pa.—Building owned by Pen Argyl National Bank	80
Smithville, Ind.—Smithville grade and high school bldgs. destroyed	70

Destruction of St. Therese's Hall, West Roxbury, Mass.

Roxbury, Mass., Has Two 3-Alarm Fires

St. Therese's Hall, an old frame church edifice on Spring Street, in the West Roxbury section of Boston, Mass., was destroyed in a very spectacular blaze, which broke out at 4 a.m. on February 4 and necessitated the sounding of three alarms. Chief Henry A. Fox and Deputy Chief Frank Sweeney directed the firemen.

A wagon gun of Engine No. 21 was used to form a water curtain and prevent the spread of the flames to an adjoining frame residence. Falling snow minimized the danger from embers and sparks, which were carried for some distance by the strong wind that was blowing. Several firemen had narrow escapes from injury when the roof and cornices of the building crashed to the street.

The first alarm was sounded at 4:02 a.m., followed by a second alarm at 4:09, and a third at 4:30. The all out signal was sounded at 7:25. The loss was estimated at $20,000.

On February 6 an alarm was sounded for a fire in the Roxbury district, at 1:50 a.m., followed by a second at 1:54 and a third alarm at 1:56. This fire swept through an old brick tenement building at Nos. 4-8 Kendall Street and the occupants had narrow escapes from death. The temperature was only slightly above zero and ladders became encased with ice. Two fire-fighters were injured.

Fire Protection in Prisons

Horatio Bond, of the National Fire Protection Association, was the principal speaker at the meeting of the Massachusetts Fire Prevention Association, held in the central fire station, Malden, Mass., on February 24. Deputy Chief A. E. Miller, of the Malden Fire Department, presided, assisted by Secretary Albert C. Maxwell, of Reading.

The subject of Mr. Bond's talk was "Fire Protection in Prisons and Institutions." Others who spoke briefly were Deputy Chief Arthur L. Marshall, Cambridge; Chief Thomas A. Qualey, Medford; Chief William J. Dooling and Deputy Chief Loren A. Keddie, Malden; Capt. C. F. Bell, Brockton; and P. Hildreth Parker, Fire Protection Supervisor for the New England Telephone and Telegraph Company. A chicken pie luncheon was served at noon.

It was voted to hold the next meeting in Somerville, on March 30, and to have a ladies' day in Hull in June. Capt. James McCarthy, Weymouth; Chief Albert T. Brown, Hingham; and Chief Frank F. Martin, Jr., Cohasset, were appointed as a committee to make arrangements for the June party.

Capt. Alfred Kinsella, of the Mine Safety Appliance Company, spoke on gas masks at the January meeting which was also held in Malden.

HARRY BELKNAP.

Winsted Has 25th Anniversary

Union Hose Co., No. 1, of the Winsted, Conn., Fire Department, celebrated its twenty-fifth birthday.

The Winsted department is entirely volunteer, has four fire houses located in different sections of the city, the central house of these having three trucks. There are five companies of 25 men each. Each house has two housemen, who sleep at the quarters, but who are not required to be there at any specified hours.

Winsted has a Gamewell alarm system, which operates on three bells and a steam whistle in separate parts of the city. There are forty-two boxes, and these can also be operated from the telephone office.

The entire department is maintained on less than $6,500 annually. Between twenty and twenty-five bell alarms are answered each year, and the still alarms average about 125. THEODORE VAIL.

Van Barklow, Chief of Fire Department, Bellevue, Ohio, for eighteen years and a member of the department for forty-three years, died when a wall fell on him as he was fighting a fire. He was sixty-one years old. His widow survives.

Republic FIRE HOSE

STRONG AND FLEXIBLE—EASY TO HANDLE RESISTS HARD WEAR AND HIGH PRESSURES

★ Compactly coiled lengths of Republic Fire Hose are on the job in hundreds of municipalities throughout the country. Today—every day—some of them go into action as dependable fire fighting weapons, proving their strength, flexibility, ease of handling and capability of long storage without leakage or deterioration.

Their construction minimizes stretch or warpage in use. Jackets are designed for hardest wear and to sustain high pressures without developing weakness. Tubes are made of Republic's special rubber compound noted for exceptional aging qualities.

Made with single or double jackets, wax treated if desired. Republic also manufactures Fire Engine Suction Hose, Chemical Hose, Street Washing Hose and Rubber Covered Fire Hose. Ask for descriptive literature.

THE REPUBLIC RUBBER CO. YOUNGSTOWN, OHIO

One of 20 New Mack Pumpers Delivered to the New York Fire Department.

NEW YORK FIRE DEPARTMENT ORDERS 20 NEW MACK PUMPERS

N. N. HILL

Famous Manufacturer of Fire Bells Supplied all the

BELLS

PRICES AND ILLUSTRATIONS

Catalog of complete line of Hill Bells is yours for the asking.

ONE of the country's oldest bell manufacturers — and one of the best, was selected by the world's biggest fire department and Mack, to supply the bells for 20 new Mack pumpers.

Hill bells are on fire trucks everywhere. Their lasting quality and clear tone has been proven in years of actual service. The one way to be sure of getting the finest of clear tone bells on all your apparatus is to specify HILL BELLS—no truck is complete without a bell — no other bells have the lasting tone you get in HILL BELLS. When you hear a fire bell think of HILL.

THE N. N. HILL BRASS CO., EAST HAMPTON, CONN.

Established 1889

A NEW BARTON
CENTRIFUGAL FIRE PUMP

THE U-60...RATED 600 G.P.M.

The FIRST 600 Gallon Front-Mounted Fire Pump to Pass ALL Underwriters' Tests

Never before such wonderful performance—at such a surprisingly LOW PRICE! Note what this powerful pump will do . . .

From suction (standard ratings) the new U-60 will pump 600 gallons per minute—develop pressures up to 250 pounds. From city hydrants, it throws 750 to 900 G.P.M. Centrifugal type! . . . the dirtiest water can be handled safely! Automatically primed!

That's going some! But listen to another fact of equal importance. THE U-60, FRONT-MOUNTED ON A FORD V-8, PASSED EVERY UNDERWRITERS' TEST—easily, smoothly—no strain on motor. *No, Sir, when you select a U-60, it isn't necessary to buy a heavy expensive truck.* THIS SAVING ALONE RUNS INTO BIG FIGURES.

And economy of installation is a money-saver too. WITHOUT A SINGLE CHASSIS CHANGE, a U-60 can be Front-Mounted and made ready for service in a few hours—COSTING BUT A FEW DOLLARS.

THEN THERE'S THE BARTON GEAR-DRIVE, part of the Pump. With this drive, the truck motor operates at approximately ONE-HALF pump speed. You can turn a U-60 wide open for maximum performance, YET THE MOTOR LOAFS ALONG. Thus, years are added to the life of your motor.

Mr. CITY CHIEF, today you don't have to spend thousands upon thousands of dollars for large capacity pumping apparatus. Instead select a U-60 — AND SAVE YOUR TAXPAYERS PLENTY — or buy two for the price of one! Today, smaller towns as well can have the VERY BEST because the low-cost U-60 is well within their pocketbook range. Check coupon below for Bulletin 75A.

ALSO NEW BARTON F-4 and F-5 Fire Pumps at Still Lower Prices!

Another amazing development! sensational! . . . taking the country by storm! Both F-4 and F-5 Centrifugal Direct-Drive Pumps have PASSED ALL UNDERWRITERS' TESTS—YET SELL AT LOWEST PRICES ON RECORD for 400 and 500-gallon capacities. The only standard Barton U-Type feature they lack is Gear-Drive. Astounding values! Check Coupon for Bulletin 95.

Records show that more than nine out of every ten accidents are side-swipes. Head-on accidents are the exception; side-swipes the rule. A FRONT-MOUNTED BARTON FIRE PUMP IS OUT OF THE DANGER ZONE. With thousands of Barton Pumps in service, we know of only one ever damaged by collision. FRONT-MOUNTING = CONVENIENCE + ECONOMY + GREATER SAFETY.

AMERICAN STEAM PUMP COMPANY, Battle Creek, Mich.
Million Dollar Manufacturer . . . Pumps and Pumps Only Since 1873

Please send me Bulletins as checked:
- ☐ No. 75A (Barton U-60, 600-gallon Gear-Driven Fire Pump.)
- ☐ No. 75 (Barton U-Type 350, 400 and 500-gallon Gear-Driven Fire Pumps.)
- ☐ No. 95 (Barton F-4 and F-5 Direct-Driven Fire Pumps.)

Name.....

Address.....

AFTER all, a good badge is a sensible investment. Not everyone can wear a fireman's emblem of service. You men who have devoted your lives to saving life and property should be proud of your badge.

You will be if you wear a BRAXMAR BADGE. Over fifty-five years of experience goes into every badge you buy.

Catalog on request.

C. G. BRAXMAR CO., 242 West 55th Street, New York

BRAXMAR BADGES
Standard for Over Fifty Years

No One Will Ever Know All There is to Know About the Science of Fire Fighters . . .

THAT'S what makes the game so fascinating—that's why chiefs who want to keep up-to-date read every issue of FIRE ENGINEERING. We pack between the covers of this magazine each month valuable information for those of you who want to know more about fighting fire. The information you get in reading FIRE ENGINEERING regularly will result in your doing a better job — winning credit — winning promotion. The cost is only $2.00 a year, shall we start your subscription with our next issue?

FIRE ENGINEERING
24 West 40th Street, New York

Among the Buffs

Secretaries of various box associations are urged to send news regarding their respective organizations.

Correction of an Error

In the previous issue, mention was made of a Box 12 Club being formed in Springfield, Ohio. An error was made as regards the number. Box 12 is the designation of the Detroit group.

Fire Fan or Box Club Member?

The following thought has been presented to the editor of this column by an ardent contributor.

He believes that it is more appropriate to call the local associations box clubs rather than fire fan associations, as very few are eligible for membership in box clubs, because many fire fans are merely fire engine chasers. Comments are invited.

Anderson Host of Box 35

Deputy Chief A. M. Anderson, of Box 35 Associates of Minneapolis, Minn., will be host to the organization at his home. A combination business and card party is planned, with fires and fire prevention the main topics of discussion. Mr. Anderson will give a talk on the formation of a National Association of Box Clubs. Refreshments will be served by the auxiliary.

Box 91 Members Must Attend Large Fires

Box 91, Philadelphia, Pa., requires its members to attend all extra alarm fires, and other emergencies, and to offer their services to the commanding executive. Likewise, they are obliged to cooperate with the men and officers of the Bureau of Fire during an emergency, but not to interfere with the officers in charge.

The club has temporarily recessed. The Secretary is A. H. Redles, 4923 Morris Street, Philadelphia, Pa.

All in the Day's Work of a Fire-Fighter

When the gong strikes, weather can offer no excuse for the Fire Department. This photograph was taken during a fire which broke out in one of the New York Central Railroad yards in New York City. The cold was so intense that an emergency hospital was set up in an adjoining building to treat those suffering from frostbite. From left to right are Commissioner and Chief John J. McElligott, and Acting Deputy Chief Walter O'Leary, in their ice-coated clothing.

Box Association for Des Moines

Those interested in the formation of a box association in Des Moines, Ia., are requested to communicate with Maxwell O'Brien, No. 15 Hose Company, 7th and College Avenues, Des Moines, Ia.

The Des Moines Fire Department has been rather fortunate as regard winter fires although temperatures of —22° were reached several times, and the average for more than a month was —4°. There have been no second alarm fires for almost eight months.

Jerry Daly Guest of Commissioner Murphy

C. Hayward Murphy, Fire Commissioner, Detroit, invited Jerry Daly, New York City, to be his week end guest so that he could attend a special meeting of Box 12 held in his home on February 29. The meeting was called in honor of Mr. Daly, who is an honorary member of the club, and a fire buff of many years standing.

New members were added. It is the practice of this group to present each new member with a regulation fire helmet with a special shield on which is inscribed, "Box 12 Associates of Detroit."

The Unique Quarters of a Fire Buff

Paxton Mendelssohn (Detroit, Mich.) has a five-room apartment over his garage which is fixed up as the Quarters of Rescue Company 12. It is rather unique, being decorated as a fireman's den with all kinds of relics, pictures and so forth, somewhat similar to the Cycle Club quarters of Dr. Harry Archer in New York City.

Box 12, Detroit, held a meeting there on February 12. The group closed up the business records in regard to the previous month's banquet and entertainment for Box 14, Jackson, Mich., and Box 7 of Dayton, Ohio.

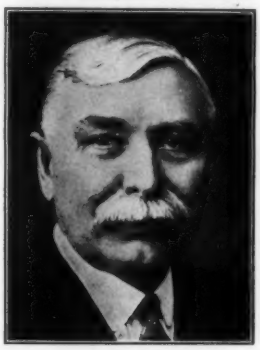
Detroit has had a number of fires because of the intensely cold weather of February, and the members of Box 12 responded to many of them.

Box 52 Association

A luncheon of the Box 52 Association, Inc., of Boston, Mass., was held on February 5 in the main dining room of the Boston Chamber of Commerce Building at 80 Federal Street. The regular monthly meeting was held on the night of February 19. President P. Hildreth Parker directed the proceedings, assisted by Secretary C. Elmer Gane and Treasurer George W. Austin. The speakers were George C. Willard, of the Boston Lightning Rod Company, and E. L. Dennis, inspector of the Massachusetts State Board of Electricians, who showed examples of defective wiring removed from buildings and told of many fires caused by overloading of electric wiring. Mr. Willard demonstrated the effects of lightning, using a model house and electrical equipment. About forty members were present at the meeting including Ex-Deputy Chief Walter M. McLean, of the Boston Fire Department.

S. C. Andersen of Omaha, Dead

S. C. Andersen, for the past twenty-six years Secretary and Treasurer of the Andersen Company, Inc., Omaha, Neb., died at his home as the result of a heart attack. He was seventy-three years old.



The Late S. C. Andersen

Mr. Andersen was born in Denmark in 1862. He came to Omaha from Denver, and became an official of the fire equipment manufacturing company.

He is survived by his widow, two sons and a daughter. He had a large number of friends in Nebraska and Iowa.

Pawtucket Has $100,000 Fire

A fire in the plant of the Newell Coal and Lumber Company on Taft Street, in Pawtucket, R. I., on February 15, threatened the entire waterfront of the city with destruction. The blaze, which was reported as of suspicious origin, caused damage estimated at $100,000. Five buildings, twelve trucks, and a quantity of coal and lumber were destroyed. Two Pawtucket firemen were injured. Chief Napoleon Taupier directed the firemen. Aid was called from Central Falls. HARRY BELKNAP.

Greenfield, Mass., is building a new central fire station at a cost of $97,650.

Lynnfield, Mass., voted to purchase a 500-gallon motor pumping engine.

Quincy, Mass., has purchased three Maxim motor pumping engines.

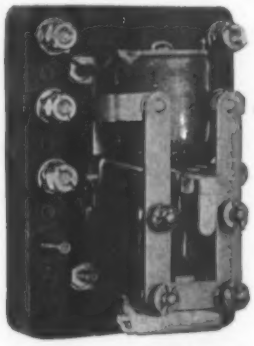
A set of blue prints measuring 24 x 40-inch, has been prepared by Assistant Chief Alex Green, of the Morristown, N. J., Fire Department, to show firemen the types of hazards that may be encountered in building construction. These prints, which have been highly praised by a number of Fire Chiefs, are for sale by Chief Green.

Manufacturers' Announcements

Relay Lights Fire House

Struthers Dunn, Inc., Philadelphia, Pa., have developed a relay for turning on the lights of fire houses. The relays are provided with two coils, one which picks up the armature, allowing the latch to set, and latches the contacts closed. The other coil trips the latch and allows the contacts to open.

The fire alarm comes over a tapper circuit to which is connected the coil



Struthers Dunn Relay

of a telephone relay. When this relay receives its first impulse, its contacts close, and the contacts of the latch relay light the fire house lights. The release coil of this device is operated by a push button so that the lights are easily extinguished.

Patterson with Woodhouse

Robert L. Patterson, 277 North Broad Street, Elizabeth, N. J., is representing the Woodhouse Manufacturing Company, New York City.

Fire Department Supplies

Walter M. Dawkins, dealer in Fire Department equipment and supplies, Port Chester, N. Y., has issued an eight-page circular, giving a complete list of the articles handled by him. Captain Dawkins is also Secretary of the Fire Chiefs' Emergency Plan, of Westchester County, New York.

Howe Has New Factory

Fire recently destroyed the plant of the Howe Fire Apparatus Company. The company immediately thereafter acquired a new plant of 50,000 square feet space at 22nd Street and Big Four Tracks, Anderson, Ind. The new plant has almost five times the floor space of one that was razed.

Pyrene Makes Changes

The Pyrene Manufacturing Company, Newark, N. J., has announced the appointment of George H. Boucher, formerly Assistant General Sales Manager, to the post of General Sales Manager. Charles G. Durfee, Manager of the Systems Department, has been advanced to Vice-President in charge of sales. J. P. Maloney, formerly Assistant General Sales Manager, has been named General Field Sales Manager.

Kiddefoam

An eight-page illustrated booklet has been issued by Walter Kidde & Co., 140 Cedar Street, New York, N. Y., announcing a new fire foam generating system.

The foam system may be either portable throughout, or centrally operated, with provision for the use of ejectors as portable units. The booklet, in addition to describing the Kidde method of foam generation, presents engineering data regarding the use of foam.

Anderson, Manufacturers' Representative

A. M. Anderson, is now established at 4512 Harriet Avenue South, Minneapolis, Minn., as representative for a number of manufacturers in the fire equipment field. Included in the number are the Buckeye Iron & Brass Works, Hewitt Rubber Corporation, Federal Electric Company, Portable Light Company, and the Cory-Patterson Manufacturing Company. Mr. Anderson is Deputy Chief of Box 35 Associates.

General Fire Truck Corporation Moves

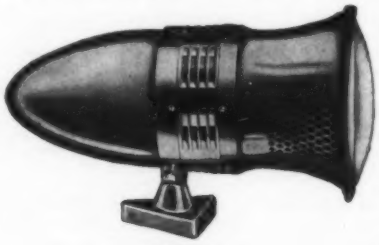
The entire manufacturing facilities of the General Fire Truck Corporation has been moved from St. Louis to Detroit. The street address is 2,200 East Jefferson Avenue.

The company was located in St. Louis for over thirty years. The move was made so that it would be closer to its eastern market and to the manufacturers of automotive parts. A sales and service office will be continued in St. Louis.

Combined Siren and Beacon

The Sterling Siren Fire Alarm Company, Rochester, N. Y., has announced a combination siren and red flashing light for fire apparatus.

The siren has a ball bearing motor, and aluminum rotor. The light has a ruby red or green lens. The light flashes on and off at predetermined intervals,



Sirenlite

and is entirely automatic through a circuit separate from that of the siren. The Sirenlite has a net weight of thirteen pounds.

Dry Extinguisher Used in Chicago

A gas main, contracted by the intense cold, cracked in Chicago, and the escaped gas was ignited by a spark in a telephone tunnel. The fire resulting was extinguished in a few minutes by the use of the Dugas extinguishing medium manufactured by the Garrison Engineering Corporation, Great Barrington, Mass.

As the manhole cover was removed, the fire shot high above the street level and threatened the elevated superstructure.

Fairfield "Plan" Host to Connecticut Chiefs

The importance of each Fire Department having an official photographer to take fire pictures and views that may be important in arson cases, was explained at the February meeting of the Fairfield County Fire Chiefs' Emergency Plan held February 26 at Newtown, Conn.

Alton Hall Blackington, Boston, illustrated a number of his best photographic "shots," obtained in twenty years of newspaper photography work, which included the biggest fires of Boston, New York and vicinity during the past few years, including the Morro Castle disaster and the million dollar forest fire of last year, which destroyed many cottages and homes on the Pacific coast. Most of the scenes, illustrated in colors on the screen, were taken by Mr. Blackington. He also explained how pictures of fires can be obtained with the new, modern film and suggested that each company appoint an official photographer to take scenes of fires which their departments attend. In arson fires these pictures will be very important for the prosecution of the defendants.

The meeting was presided over at the outset by First Vice-President Sidney Stapely, Chief of Nichols, Conn., until the arrival of Chief Frank R. Gisborne, Old Greenwich, President.

New members elected to membership include: Chief Walter L. Glover, Newtown; Commissioner August W. Kann, Nichols and William F. Schepp, clerk of the Nichols Fire District.

Addresses of welcome were given by P. H. McCarthy, President, Newtown Fire Department; Chief Walter Glover, the Newtown Company and Chief William Gower, Dodgingtown (Newtown) Company.

The meeting voted to give a loving cup to the State Convention committee this year, which will hold its annual convention in Greenwich. The vote was taken after Chief Isaac Hubbard, Greenwich, had suggested the idea and Ex-Assistant Chief Bernard Scully, Westport, Vice-President of the Connecticut Firemen's Association, had seconded the resolution.

Visiting Chiefs who were heard in short talks were: Chief Lynn Deming, New Milford Fire Department; Chief John Morehouse, Brewster, N. Y., company; Chief Harry Lawton, Middletown; Chief Henry Taft, Norwich, President of the Chiefs' Club of Connecticut; Assistant Chief Edmonds, New London and Chief Swan, Seymour. There were numerous other Chiefs from out of town attending.

Following the meeting, refreshments were served. The meeting accepted the invitation of Chief Frank R. Gisborne

M·S·A FIREMAN'S HELMET

...Compare it with any other!

Distinctive Features: *Molded in one piece from durable micarta of great fracture-resistance. Strong reinforcing on crown and around brim. Rubber-cushioned, genuine leather sweatband. Self-ventilation. Adjustable web hammock in crown to absorb shock. Leather chin-strap with separate adjusting and fastening devices. Detachable, zipper-operated ear lugs. Available in standard black, or white for chief and officers. Shield insignia on any color background.*

By the verdict of departments from coast to coast, the M.S.A. Fireman's Helmet has *everything!* It makes a trim, smart appearance on parade, and in actual service it has *extra* strength for protection against tremendous blows; plus unusual lightness and comfort, insulation against electric shock, and immunity to the softening effect of water or chemicals. ● We invite you *to test for yourself* the all-around superiority of the M.S.A. Fireman's Helmet. At your request, we'll gladly arrange an actual demonstration for you.

MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Streets . . . Pittsburgh, Pa.

District Representatives in the Principal Cities

M. . . Products include Breathing Apparatus . . . Inhalators . . . Comfo Respirators . . . Masks of all types . . . Gas Indicators . . . Gas Detectors . . . Safety Goggles . . . Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Clothing . . . First Aid Equipment . . . Submarine Escape Apparatus . . . Bulletins sent on request.

RED COMET STOPS FIRE AUTOMATICALLY

and is now protecting hundreds of homes, stores, industrial plants, warehouses, garages, filling stations, automobiles, trucks and busses, in every state in the Union, in Alaska, Canada, and in hundreds of Fire Departments.

We want Fire Department men to represent us!

We have splendid openings in some territories where we particularly want Fire Department Men to represent us. Commissions are good—and we have a complete line of Automatics, Manual Grenades, Pump Guns, Soda-Acid and Foams in 2½ Gallon Size, Chemical Engines, Fire Sirens, and unusually good Fire Department Hose.

If you have any time on your present job, be sure to write us for Free Facts and complete information, which will be sent you without any obligation.

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recommend the LEADER . . .

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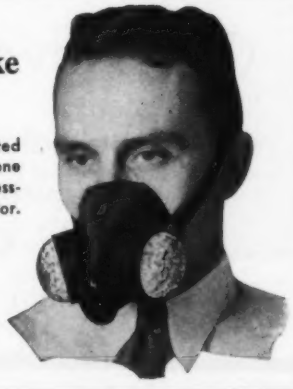
FOR ALL ELECTRICAL and FLAMMABLE LIQUID FIRES

Walter Kidde & Company, Inc.
100 West St., Bloomfield, N. J.

Service and Sales Offices in all Principal Cities

Cover's Dupor Two Sponge Smoke Respirator



TWO large fine selected Sponges do the trick that one alone can't. At last, a successful *POCKET* Smoke Protector.

Price, $24.00 Dozen
Sample, $2.00, Postpaid

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34 years service in the fire field

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Prompt service Quality products

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Shut-Off Nozzles
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Fire Department Extinguishers
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All Types Hose Couplings
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Pump and Hydrant Valves
Hose Racks and Cabinets
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Underwriters' Industrial Extinguishers

ELKHART BRASS MFG. CO.
ELKHART, INDIANA

SOOT BLAST
Puts out chimney fires

A vital **NECESSITY**
IN EVERY DEPARTMENT

NO ZINC - NON-EXPLOSIVE

Saves climbing icy roofs; saves chemical damage; saves injury to firemen; saves time and money; cuts fire loss by putting out bad chimney fires in less than 6 minutes.

Now being used by U. S. Government

Price $4.50 per case of 12 packages

See your LOCAL DEALER or write to

The STEBIS COMPANY

MINNEAPOLIS, MINN.

SOOT-BLAST

Also comes put up in 100 lb. bags at $12.50 per bag.

"GOODALL"
FIRE HOSE HEADQUARTERS
ALL TYPES
COTTON RUBBER LINED
PLAIN OR WAX AND GUM - FLAT OR REGULAR CURE
CHEMICAL AND BOOSTER HOSE
UNLINED LINEN FIRE ENGINE SUCTION
Write for Agency Plan
GOODALL RUBBER COMPANY
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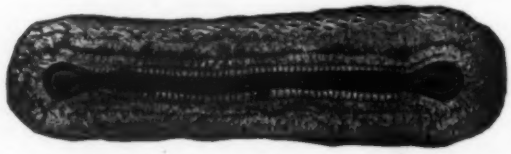
New York - Pittsburgh - Chicago - Cleveland - Houston

Bi-Lateral Fire Hose



The one hose that does not require frequent replacements. Always reliable for fire service no matter how old, if the jackets are intact.
Lined with three rubber tubes.

BI-LATERAL FIRE HOSE CO.
15 Park Row, New York, N. Y.
20 N. Wacker Drive, Chicago, Ill.

CRACKERJACK FIRE HOSE

The hose with an unsurpassed reputation for QUALITY and SERVICE that has made it the STANDARD OF THE WEST for over 25 years.

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Manufactured by
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"Territories Available"

FLAT CURED—
WAX and GUM
TREATED—
Any type you want!

Quaker City makes a complete line of fire hose in a wide price range—but every foot of it is made to give you the best service you can get in its price class. For a complete list of brands and prices write us anytime—

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have data and information which can help you greatly. Get in touch with them.

to hold the March meeting in Old Greenwich on March 25. The largest attendance of the year was present, 185.

CONVENTION DATES

March 11—NEW YORK STATE FIRE CHIEFS' ASSOCIATION. Mid-Winter Meeting, City Hall, Mt. Vernon, N. Y., at 10 a.m. Secretary, Chief Chris W. Noll, Poughkeepsie, N. Y.

March 18—FIRE CHIEFS' EMERGENCY PLAN. Regular Meeting, Weaver Street Fire House, Town of Mamaroneck, N. Y. Secretary, Walter M. Dawkins, P. O. Box 341, Port Chester, N. Y.

March 18-19—NEW ENGLAND MUNICIPAL SIGNAL ASSOCIATION. Quarterly Meeting, Biltmore Hotel, Providence, R. I. Secretary, R. J. White, 32 Oakdale Street, Brockton, Mass.

March 25—NEW JERSEY MUNICIPAL SIGNAL ASSOCIATION. Bi-Monthly Meeting, Fire Headquarters, West New York, N. J. Secretary, A. A. Sullivan, Fire Alarm Headquarters, Bayonne, N. J.

April 4—CONNECTICUT FIRE CHIEFS' CLUB. Spring Meeting, Newington, Conn. Secretary, ex-Chief David B. Mercer, Westville, Conn.

April 20-22—FLORIDA STATE FIREMEN'S ASSOCIATION. 11th Annual Convention, Key West, Fla. Secretary, F. C. Pfaender, Winter Haven, Fla.

April 22—FIRE CHIEFS' EMERGENCY PLAN OF FAIRFIELD COUNTY (CONN.). Regular Meeting, Old Greenwich, Conn., Fire Headquarters. Secretary, John Moehring, Toms Road, Stamford, Conn.

May 4-5—SOUTHEASTERN ASSOCIATION OF FIRE CHIEFS. 9th Annual Convention, Atlanta, Ga. Secretary-Treasurer, Chief R. S. Baughan, Fire Department, Norfolk, Va.

May 6-8—GEORGIA STATE FIRE COLLEGE. Annual Fire College, Atlanta, Ga. Director, Harry Phillips, Assistant Fire Marshal, Dept. of Fire, 166 Alabama St., S.W., Atlanta, Ga.

May 11-15—NATIONAL FIRE PROTECTION ASSOCIATION. 40th Annual Meeting, Atlantic City, N. J. Secretary-Treasurer and Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 26-29—IOWA FIRE SCHOOL. 12th Annual School, Ames, Ia. Director, Lindon J. Murphy, Municipal Engineer, Iowa State College, Ames.

May 27—IOWA STATE FIRE CHIEFS' ASSOCIATION. Annual Convention, Ames, Ia. Secretary-Treasurer, Chief L. R. Morris, Ames.

June—SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION. 31st Annual Convention, Camden, S. C., exact date to be decided later. Secretary-Treasurer, John H. Wohlers, Chief, Fire Department, Charleston, S. C.

June—NEVADA STATE FIREMEN'S ASSOCIATION. 1st Annual Convention, Reno, Nev. Secretary, Norman Brown, Carson, Nev.

June 1-3—OKLAHOMA STATE FIREMEN'S ASSOCIATION. 42nd Annual Convention, Enid, Okla. Secretary-Treasurer, Charles Slemp, 1701 Northeast 63rd Street (Box 69-A), Oklahoma City, Okla.

June 8-11—FIRE CHIEFS' ASSOCIATION OF OHIO. 19th Annual Convention, Steubenville, Ohio. Secretary-Treasurer, Chief Philip J. Harty, Fire Dept., Youngstown Sheet & Tube Company, Youngstown, Ohio.

June 9-12—ANNUAL FIRE COLLEGE, ILLINOIS FIREMEN'S ASSOCIATION. 12th Annual Fire College, University of Illinois. Director, L. H. Provine; Secretary, Assistant Chief Roy W. Alsip, Fire Department, Champaign, Ill.

June 17—NORTHWESTERN OHIO FIREMEN'S ASSOCIATION. 63rd Annual Convention, Bowling Green, Ohio. Secretary, J. W. Gardner, Ashland, Ohio.

June 22-23—MISSOURI VALLEY CHIEFS' ASSOCIATION. 2nd Annual Convention, Black Hawk Hotel, Davenport, Ia. Secretary-Treasurer, Chief Ray Tiller, Waterloo, Ia.

June 23-25—HUDSON VALLEY VOLUNTEER FIREMEN'S ASSOCIATION. 47th Annual Convention, Middletown, N. Y. Secretary, Chief Chris W. Noll, Poughkeepsie, N. Y.

June 22-26—SOUTH DAKOTA FIRE SCHOOL. 7th Annual School, Brookings, S. D. Secretary, M. C. Sullivan, Parkston, S. D.

June 23-25—NEW ENGLAND ASSOCIATION OF FIRE CHIEFS. 14th Annual Convention, Hartford, Conn. Headquarters, Hotel Bond; Exhibits, Armory, Secretary-Treasurer, Chief John W. O'Hearn, Watertown, Mass.; Chairman, Exhibit Committee, Chief Daniel B. Tierney, Arlington, Mass.

June 24-26—MARYLAND STATE FIREMEN'S ASSOCIATION. 44th Annual Convention, Hagerstown, Md. Secretary, George R. Lindsay, Hagerstown, Md.

July 7-10—PROVINCE OF QUEBEC POLICE AND FIRE CHIEFS' ASSOCIATION. 4th Annual Convention, Grand'Mere, Que., Can. Secretary-Treasurer, Chief Robert Harrington, Fire Dept., McColl-Frontenac Oil Co., Ltd., Windsor Hotel, Montreal.

July 27-30—WEST VIRGINIA FIRE SERVICE EXTENSION SCHOOL. 6th Annual School, West Virginia University, Morgantown, W. Va. Director, D. L. McElroy, at the University.

Aug.—CENTRAL DISTRICT FIREMEN'S ASSOCIATION. Annual Convention, one week, date to be announced later. Secretary, Gilbert Coble, P. O. Box 366, Punxsutawney, Pa.

Aug.—NATIONAL MUNICIPAL SIGNAL ASSOCIATION. 41st Annual Convention, New York City. (Exact date to be announced Later.) Secretary, W. H. Harth, Columbia, S. C.

Aug.—UTAH STATE FIREMEN'S ASSOCIATION. 36th Annual Convention, Ogden, Utah. (Exact date to be decided later.) Secretary, John J. Creedon, P. O. Box 25, Bingham Canyon, Utah.

Aug. 17-20—CALIFORNIA STATE FIREMEN'S ASSOCIATION. 14th Annual Convention, Lodi, Cal. Secretary-Treasurer, H. E. Strasser, 1171 Tenth Ave., San Diego, Cal.

Oct. 13-15—ILLINOIS FIREMEN'S ASSOCIATION. 49th Annual Convention, Pekin, Ill. Secretary, Assistant Chief Roy W. Alsip, Fire Department, Champaign, Ill.

Talking Fire Alarm

Bridgeport, Conn., will install an amplifying fire alarm system in its ten fire houses, at a cost of $1,800.

With this system, which was approved by Chief Thomas F. Burns, a telephone alarm from a resident is broadcast from headquarters to every fire station in the city. The amplifying system will be used to instruct companies regarding the department response.

Pfaender Reappointed Chief

Floyd C. Pfaender, Chief of the Fire Department at Winter Haven, Fla., for nineteen years up to 1934, has been reappointed head of the department. G. F. Bassett, who was Chief from 1934 to the present, has resigned.

Chief Pfaender is an active honorary member of the Southeastern Fire Chiefs Association, District Vice-President of the International Association of Fire Chiefs, and a member of the board of the Florida State Fire College. He has served as Secretary of the state association for ten years.

Massachusetts Chiefs Meet at New Bedford

In spite of zero weather and icy roads, more than forty Chiefs journeyed to New Bedford on February 19 for the luncheon and meeting of the Fire Chiefs' Club of Massachusetts.

Chief Charles L. McCarthy, of Worcester, presided. The speaker was Edmund S. Cogswell, Deputy Commissioner of Insurance of Massachusetts, who talked on "Public Fire Insurance Adjusters."

Chief Ray D. Wells, of Falmouth, and Superintendent Lorton C. Walden, of the Worcester Protective Department, were among those who discussed the topic.

Chief Edward F. Dahill, New Bedford, extended the greetings of the city and represented Mayor Charles S. Ashley, who was unable to be present.

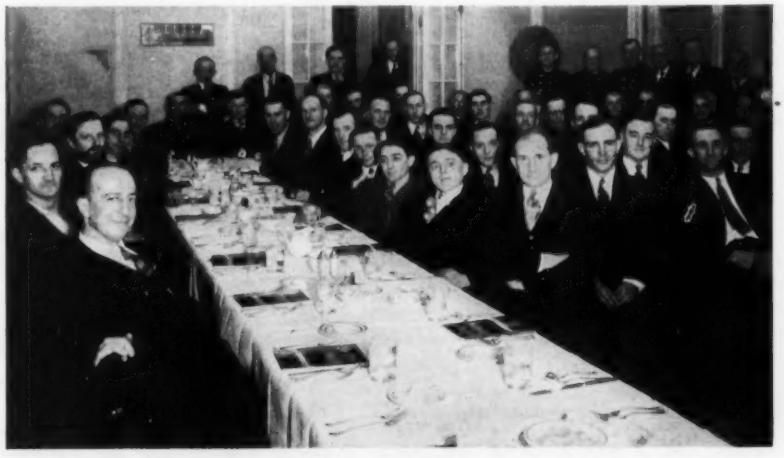
Alfred L. Miner, Massachusetts Safety Council, spoke briefly. George O. Mansfield, Chief State Fire Inspector, was present and took part in the discussion. Mr. Cogswell said new rules are being drawn up for the regulation of the adjusters.

New Hampshire officials who attended the meeting were Chief Charles H. French, Manchester, and Chief William T. Happny, Concord.

HARRY BELKNAP.

Firemen Misdirected by Telephone Call

Only the reflected glow of fire on the sky directed firemen of Falmouth, Mass., to a fire which was reported by telephone to be at a point about four miles from the actual scene. The fire was in a fashionable summer home and caused $15,000 damage.



Newport, Vt., Firemen Guests of Local Merchant

The volunteer firemen of Newport, Vt., were guests of Joseph H. Bonneau, a local merchant and banker, at a dinner arranged to show his appreciation for the good work in saving his home when threatened by fire. The men demonstrated that they could eat food as well as smoke. E. F. Humphrey is Chief.

FALSE ALARMS

BEST REMEDY

During the course of a woman's club afternoon gathering, smoke was discovered in the corridor of the hotel, and all of the guests were asked to leave to avoid confusion. It was not until the club members were outside that they discovered that the fire was of minor consequence.

One of the members afterwards related her experience to a friend:

"I felt awful. I felt hysterical."

"That must have been awful. What did you do?" asked the friend.

"I went home. I thought that would be the place for me if I was going to have hysterics."

"That must have been terrible. What did you do when you got home?"

She explained thoughtfully, "Nobody was home."

"That must have been horrible. All alone and feeling hysterical. Wasn't George home? What did you do?"

"There wasn't anything to do, so I went to bed."

There is nothing like a budget to make you realize how much you spend for what little you get.

PLAY OF WORDS

The department instructor could not understand the general roar of laughter at his remarks. All he said was:

"Now I'm not going to talk very long, but if you get what I'm going to say in your heads, you'll have the whole thing in a nutshell."

Then there was the mechanical engineer who wanted to take his nose apart to see what made it run.

BETTER ATTRACTION

Charlie was dead—in fact, he had been so for several years. He was the jovial spirit who spent all his free time at the fire house. Now it was his widow who was about to go.

As she lay in bed, she instructed her neice to bury her in her black silk dress, but to cut the back out and make herself a dress.

"Oh, Aunt Mary, I don't want to do that. When you and Uncle Charlie walk up the golden stairs, I don't want people to see you without any back in your dress."

The old lady replied, "They won't be looking at me. I buried your Uncle Charlie without his pants."

HE MEANT IT

A Captain was assigned to the State College during Fire Prevention Week to give a talk on avoiding the large fire losses. As it was expected that the crowd would be much larger than the room for which the lecture was assigned, the professor in charge left a notice on the board:

"Professor Jones will meet his classes in Room 342."

A wit of the group erased the "c" so that the notice read:

"Professor Jones will meet his lasses in Room 342."

The professor marched in with the officer to show him some notes. The Captain observed the notice and the altered word. As he went by, he winked to the group, and with his finger rubbed out the "l."

Here's to the happy, bounding flea!
You cannot tell a he from a she;
For they both look just alike you see,
But he can tell . . . and so can she.

WHY A BOOSTER?

During an arson trial in Westchester County, N. Y., a woman lawyer was examining the Chief of the town in which the fire had occurred. It was brought out that the Chief had ordered the use of a booster line to extinguish the fire.

Quite dramatically she asked:

"But why did you not order water upon the fire, instead?"

Many a guy who dashes out a back door as though to catch a train does so because the man coming in the front door just missed one.

A MOTIVE

A resident of the plains moved into the city where he hoped he might find work. At that time applications were being received for firemen. He applied for the physical examination.

"Ever been sick?" the doctor asked.

"Nope."

"Ever have any accidents?"

"Not a one."

"Then what caused the scar on your hand?" questioned the doctor.

"Rattlesnake bit me."

"And you don't call that an accident?"

"Naw. He did it on purpose."

POLITENESS

In accordance with a request by the management, he was making a fire prevention tour of the plant. As he strolled through one of the corridors, during the noon hour he saw a group of young men talking. Nearby, on the floor was a smoking cigarette.

He shouted at the group, "Whose cigarette is that?"

A wit in the crowd answered, "Yours. You saw it first."

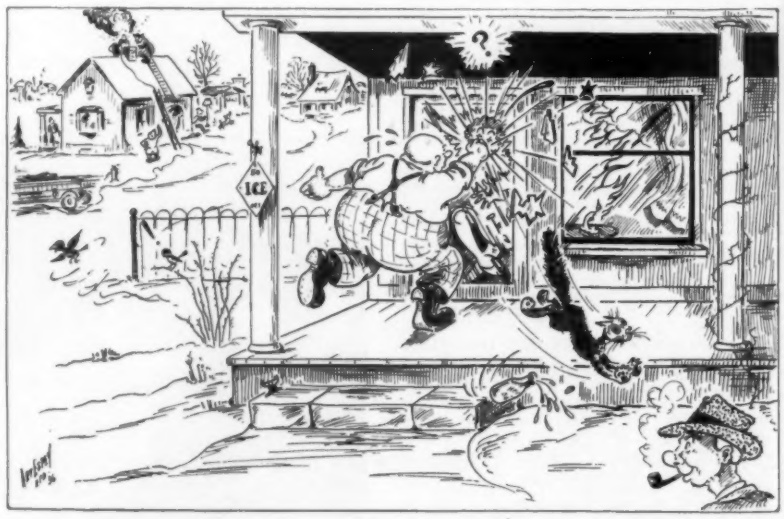
A little fellow when asked in Sunday school, what were the sins of omission, answered, "They are sins we ought to have committed and haven't."

PERFECT DEFENSE

The two were having an argument in back of the truck.

"What will it be, you skunk, swords or pistols?"

"If I were a skunk, would I need a sword or pistol?"



Drawing by "Art" Espey

A Little Bit of Humor that was Painful for the Wife

A resident of North Denver, Col., should receive all the honors for the best comedy of errors. On hearing fire apparatus pull up to extinguish a small chimney fire next door, he ran out to watch the proceedings. In opening the door, a gust of wind blew a lace curtain into the flame of a lighted candle, and started a fire. He stood on his porch and watched the firemen until his attention was attracted by the light of the fire shining through the window. When he saw that his house was afire, he rushed to the door but found that the latch had snapped. He hammered on the door but failed to gain his wife's attention. He broke the glass on the door with his fist just as his wife bent over to unlatch the door from the other side. His fist struck her nose. While the man was bandaging a cut on his arm, and his wife was looking after her bleeding nose, the Fire Department extinguished the fire.

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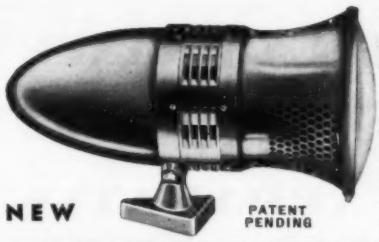

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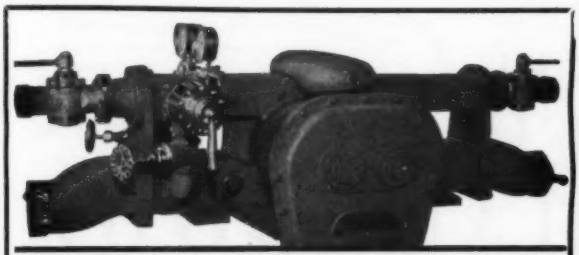

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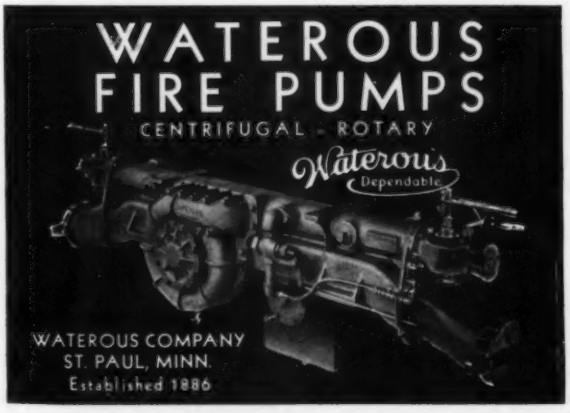

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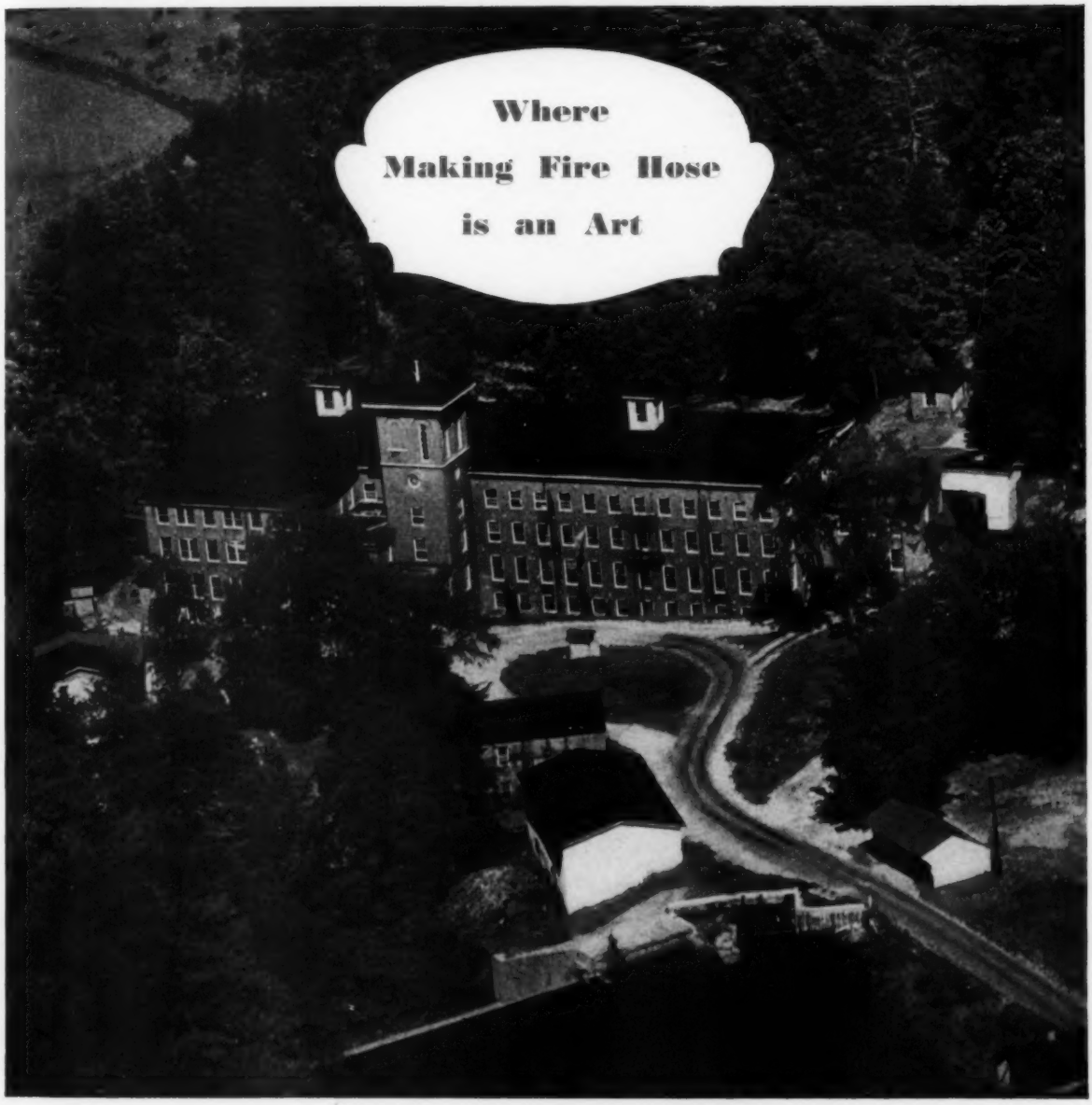

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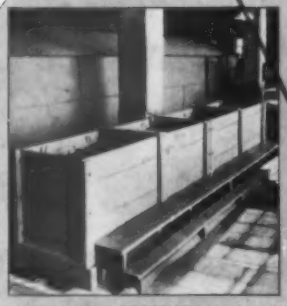

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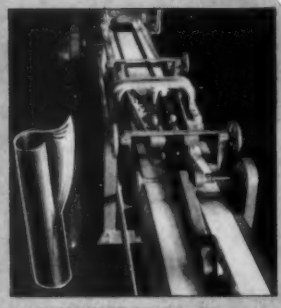
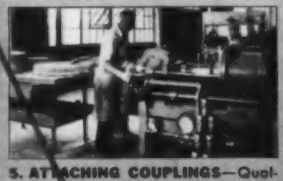


3. LAMINATED PLIES—Producing EUREKA Laminated Ply Fire Hose Tubes, the new and better tubes.

BE SURE of your fire hose. Be sure that it will stand up under all kinds of conditions—that it will protect the lives of your firemen and the lives and homes of the people in your community—that it is made by a well-known manufacturer, of the best materials throughout, in a modern, fully equipped factory.

If you are sure that your hose meets these requirements, you must be using a Eureka brand of hose.

Eureka, with the most complete line of quality fire hose ever made and over 60 years of manufacturing experience, is the largest manufacturer of fire hose in the country. Be sure to call in a Eureka representative and let *him* know your hose needs.



5. ATTACHING COUPLINGS—Quality Couplings are an important feature of quality Fire Hose.

4. VULCANIZING TUBES IN JACKETS—Each length of hose is cured on individual Steaming Head to eliminate subsequent distortion when under hydrostatic pressure.

6. TESTING FIRE HOSE—All Brands of EUREKA Fire Hose are tested under hydrostatic pressure before shipment.

EUREKA FIRE HOSE FROM RAW MATERIALS TO FINISHED PRODUCT

EUREKA FIRE HOSE DIVISION
of
United States Rubber Products, Inc.
1790 BROADWAY NEW YORK, N. Y.

EUREKA—FIRE HOSE

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CHICAGO
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DALLAS
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NEW ORLEANS
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